Railway Age

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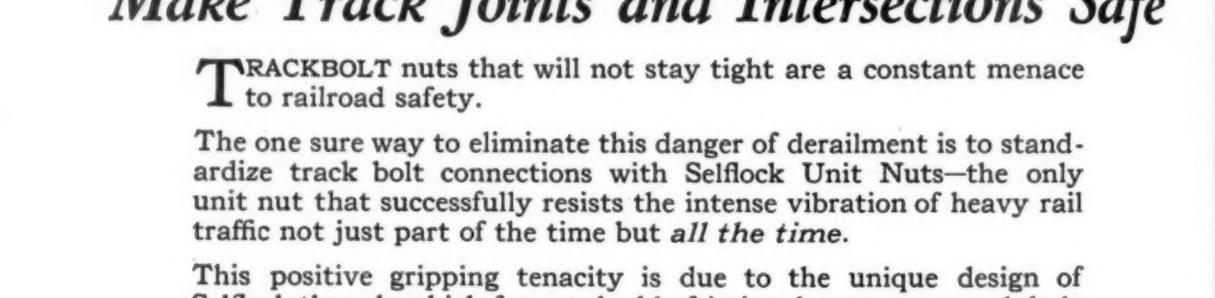

"They Lock on Every Thread"

"The Nut with the Star Crown"

Railway Age

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The "Blue Comets"

ON February 21 the new "Blue Comet" trains of the Central of New Jersey started operating between New York and Atlantic City. In addition to the blue and cream exterior color of these trains, other features have been added to provide *de luxe* facilities for passengers, while charging them no more than the straight day-coach fare. The trains have no parlor cars, in the ordinary sense, for which an extra charge is made. Coaches are provided with the new bucket-type seats heavily upholstered arranged in pairs and what probably is an innovation in such service, the purchase of a ticket assigns the passenger to a definite seat. No seats are sold in the observation car or in the smoking car, these seats being provided as an additional facility for passengers. Details of decoration, of uniformed personnel, of dining car service of the special attractions for women passengers and of the color treatment of the exterior of the cars and locomotives are novel. We believe that railroad men will be greatly interested in this innovation and the thoroughness with which the Central of New Jersey has carried out the task which it has undertaken. Certainly all will join in the hope that the splendor of this service will serve to attract to the rails passengers who have lately been preferring highway transport to the facilities ordinarily provided at the day coach rate.

An Example of Taxation Advantages Enjoyed by Motor Coaches

THE relationship between the combined maintenance of way and tax costs assignable to railway passenger service and analogous expenses of the motor coach operator in Tennessee are discussed in an article which appeared in the January issue of the N.C. & St. L. Ry. News Item. The article is compiled from information secured from the Highway Department of that state. In commenting upon the situation the editor of the News Item concedes at the outset that his railroad has secured freight traffic from territories opened by new and improved highways, but nevertheless adds: "The amount of taxes paid per passenger mile by motor coaches in Tennessee is almost exactly the same as the average taxes paid per passenger mile by the railroads of the United States. For this amount both the railroads and the motor coaches receive the ordinary governmental services and protection afforded to every taxpayer. So far as the railroads are concerned, there the matter stops * * * * * the motor coach for a payment of approximately 0.3 cents per passenger mile secures a right-of-way, the maintenance of it and the ordinary governmental services and protection. The railroads, to get these same things must spend approximately one and seven-tenths cents per passenger mile or nearly six times as much as the motor coach." The foregoing is a concise outline of the decided advantages which inequalities in taxation permit common carrier motor coaches over their railway competitors. The situation in Tennessee is similar to that throughout the country. The fact remains, however, that where motor coach operations are economically sound the users of these services can easily afford to pay the total cost of providing them. There are some tasks for which the motor coach is intrinsically a more efficient unit than the train and some for which the train is better suited than the motor coach. National well-being requires the use of the more efficient medium in any case. Traffic is not now being divided upon the test of true efficiency. It cannot possibly be so divided while highway vehicles continue to pay less than the full value of their use of the highways and *in addition* the usual taxes levied to cover the expense of other governmental activities.

A Machine Tool Relic Retired

A RECENT issue of one of the railway employees' magazines carried an interesting account of the retirement of an old driving wheel lathe, built in 1854 and said to have been in daily railroad use ever since, except for a brief period during the Civil War when it was pressed into service for the manufacture of cannon for the Confederate army. Two questions are immediately suggested in the minds of everyone interested in production and efficient shop operation. Why was not this 74-year old machine, with its limited strength, convenience of operation and productive capacity, retired many years ago? How many more machines of equal or slightly less antiquity are still in service in American railroad shops? Railroad shop machinery requirements, particularly at outlying points, frequently make the range and variety of work handled a more important factor than productive capacity, but it is difficult to imagine just what conditions could justify the use of a machine 74 years old, or even one-half that age. In answer to the second question, it is doubtless accurate to say that while many machine tools still used in railroad shops are of too antiquated design for the most economic service, there is a growing appreciation of what can be accomplished with modern machines and a definite effort is being made to raise the standard of machine equipment. A questionnaire sent out in connection with the machine tool survey in the Annual Review number of the *Railway Age*, indicates that more machine tools were ordered in 1928 than in 1927, many of them being purchased for replacement by roads having no new shop facilities under way. One road reported that it worked on a program during 1928 to eliminate all machine tools that had been in service more

than 10 years in the main shop. This trend toward a higher standard for machine equipment in railroad shops by retiring obsolete types and installing in their places efficient modern units is in the interest of economy and deserves the hearty support of railway managements.

A Foreign Railway Protest Against Unregulated Motor Vehicles

THAT railway officers in other countries are in agreement with those of United States in their demand for effective regulation of common carrier highway vehicles is indicated in a statement incorporated by the general manager of South African Railways and Harbors in his annual report for the year ending March 31, 1928. After discussing the effect of highway competition on railway traffic and outlining the progress toward common carrier motor vehicle regulation in other countries, the report continues to say, "The need for proper control of motor vehicles plying for hire is imperative in the interests of the public. The object of regulating road carriers is not to stultify the development of the motor vehicle or its beneficial influence in developing the country, nor, as is often thought, to give the railways a privileged position which would have the effect of compelling private carriers to withdraw their services. * * * * Legislation is necessary to safeguard the interests of the State railways which must, of necessity, remain the principal transport agency of the country, and as such should be in no worse position than its competitors to handle all classes of traffic." Thus, like American roads, these South African railways are not seeking preferred treatment in the competitive struggle with independent highway operators. They ask nothing more than a removal of the important advantage which lack of regulation permits their competitors to enjoy.

When Considering Plans for Centralized Control

MANY roads are now giving consideration to proposed installations of centralized control in which train movements on territories that are now congested, will be directed by signal indication without written train orders, the signals as well as the power-operated passing track switches being under the control of an operator or dispatcher at a central point. The benefits to be gained from such an installation depend on so many different factors that some roads have assigned the problem to a committee of officers from the operating, mechanical, engineering and signal departments for study.

The result to be secured from a proposed installation of centralized control is increased facility of train operation. Therefore, the operating officers, in co-operation with the committee, should secure data, time-distance charts and explanations of the present and desired procedure of train movements. The work of the other members of the committee should be to advise as to the most feasible means of securing the results desired or to offer suggestions for alternate methods of procedure. For example, the mechanical officers must anticipate changes in power that may affect the speed or tonnage ratings.

On the Pere Marquette installation of centralized control, high-speed turnouts and long sidings have been used to advantage in expediting meets which are frequently made without stopping either train. The engineering officer on a committee making such a study must determine the cost of proposed track changes because these charges may exceed by far the cost of the signal and interlocking equipment required for the new method of operation. In fact, the task of deciding where to make changes in the track layout appears to be the major problem for the committee, and a careful time-distance study of train movements while riding the trains involved is advisable before authorizing expensive changes. Consideration must be given the fact that when movements are directed by signals, a train, even when running on short time, can frequently be advanced farther to make a meet. As a result, the places used most frequently as meeting points may be changed under the new system.

Some roads may hesitate to authorize centralized control installations because of a high cost for track changes. One such road is proceeding with the installation of the equipment without making track changes at present, with the idea that after the system is in operation, more definite data can be secured to indicate where passing-track changes will be of the most benefit. With this procedure nothing will be installed that may not be used later, and the only additional cost is a small operating charge for moving the signals and power switch machines at locations where passing tracks are later extended.

Waste in the Transportation Industry

THE Chamber of Commerce of the United States is taking a referendum ballot of its membership on a report of its committee on highways and motor transport on the subject of public policy regarding highway construction and maintenance. One of the committee's recommendations is most interesting. It reads:

> The committee recommends that programs for construction and maintenance of highways of general motor use should be financed as far as possible by highway users, and that revenues derived from other sources should be limited by the general benefits resulting from the improvements and by the ability to pay.

The general adoption of such a policy regarding highways would go far toward securing a more economic distribution of transportation among the various agencies according to their actual efficiency. Insofar as charges for any given transportation service do not at least cover the total cost of that service, a premium is placed on the use of a less efficient transportation medium. Charges made by highway carriers, if the plan recommended by the Chamber of Commerce were adopted, would have to reflect a larger share of the *actual cost* of such service than is frequently the case at the present time.

Should not the same principle be applied also to waterway transportation i. e., on improved waterways require the payment of tolls to cover maintenance and interest charges on sums expended to improve the waterways? It is difficult to see how any other policy regarding either highways or waterways can with honesty he defended, unless we are to say frankly that as a matter of national policy we deliberately wish to discourage efficiency in transportation.

It is well to note also that, even if the policy recommended by the Chamber were adopted, the railroads would still labor under artificial disabilities in measuring their efficiency with waterways and highways on an equal basis. In the first place, railroads not only provide their own right of way, but they also pay taxes on it. If highway or waterway users were to be placed on a basis to compete on equal terms, then they would be taxed not only for the full value of public facilities provided for them (which tax would resemble a rental), but they would also be required to make a further payment corresponding to the regular tax rate on private property on the actual monetary value of all highways and water ways.

In the second place, if highway users are to have their taxation held down, as the Chamber's committee recommends, by having a portion of highway costs paid by others benefiting from highway improvements, then what are we to say of benefits derived from railroad improvements? If a railroad constructs a beautiful station, eliminates a grade crossing, or electrifies, the chances are that surrounding property owners benefit greatly by increased real estate values. None of this increase is recoverable by the railroad, yet under the Chamber's recommendations a similar increased value resulting from highway improvements could be taxed to apply on the cost of the highways.

Plainly, from the above, therefore, even if the Chamber committee's recommendations should be adopted and even if they were made to apply to waterways as well as highways, the railways would still be materially handicapped in measuring their efficiency with the other agencies of transportation. It is, nevertheless, encouraging to see such a distinguished committee propose the removal of at least a portion of the railways' handicap, the existence of which gives rise to one of the major industrial wastes of our nation today.

The Canadian National's Financial Structure

THE annual report of the Deputy Minister of Railways of Canada to the House of Commons gives a clear analysis of the problem presented by the financial structure of the Canadian National Railways. The principal feature of this structure at the present time which makes for misunderstanding is the addition each year to the company's liabilities of interest charges on advances made to cover past deficits. Under ordinary business procedure, as the Deputy Minister points out, the acquisition of the railways would have ended the question of further interest on the loans, the properties themselves being accepted in satisfaction of claims.

The report further points out that had the affairs of these lines been liquidated by court processes, financial reorganization would have taken place at that time and the financial structure of the present company would now be greatly simplified. The debts the roads now are charged with as owing to the government represent a hodge-podge of items—a portion representing actual investment in road and equipment, and hence a reasonable charge, but many of them of a kind which could never appear in the balance sheet of a solvent private company. The logical remedy would appear to be frankly to write off operating and interest losses of previous years, permitting the company to start anew with liabilities in line with the bona fide wise investment in the properties—their value today with a fair allowance for value as a going concern. This means simply that the properties ought to have a balance sheet comparable to that of a solvent private corporation.

The earning power of these railways under efficient management is now known. To continue their accounts on what virtually amounts to a receivership basis after so long a time not only reflects a needless delay in facing facts which are now plain and understandable, but also it works a hardship on the management by inadequately reflecting its accomplishments in improving the efficiency of the operation of the property. To show improved operating results almost every year and, at the same time to see the net debt increase solely on account of a method of bookkeeping which is not even very good bookkeeping is a needless discouragement which could well be ended. These remarks are made, not in a spirit of criticism, because, apparently those who are in a position to remedy the situation are working toward that end. Rather our purpose is merely to call attention to the importance of their efforts.

Letter Writing in Supply Work

AN experienced storekeeper recently remarked that the propensity of suppliers and users of material alike to talk to each other and at each other through typewriters is a crying evil of the storekeeping business. What does one find in the correspondence files that makes them so numerous and thick? Do they not often begin with an inquiry for information which a well-managed office should already have at its disposal, or with a request for an explanation of some situation, or for action in some particular which could quickly be obtained over the telephone or by stepping into the next office? Is it not a fact that much of the typical correspondence consists of repeated inquiries by one party for replies which should have been made to the first letter and by repeated excuses or evasions by the other party, or by letters or notes which are directed primarily to get the correspondent on record and shift the burden of responsibility for omissions or commissions somewhere else?

Is the solution or settlement of a problem, or action upon it, facilitated by such writing? Sometimes it is; often it is not. It is true that many officers find it necessary through letters to prod their correspondents to action and it is true that other officers feel the need of getting everything down in black and white. If a man must be prodded through correspondence, letter writing is apt to prove a poor remedy, encouraging him rather to strive merely to keep up with the correspondence, while correspondence over controversies often drives the parties farther apart.

The general storekeeper of the Canadian Pacific in 1921, began to chart the volume of letters and wires received and sent from all stores day by day. As a result of that charting and the attention given to the correspondence, the volume is now less than half of what it was five years ago, although the amount of supplies handled has by no means decreased. The Canadian Pacific found that a lot of its letter writing in the store department was unnecessary.

Letter writing has a marvelous capacity to expand when things fail to flow smoothly, but often without helping to keep things on the move. It should be remembered that a good field man is sufficiently busy with the really essential correspondence these days without being pestered with idle correspondence or forced to en-

gage in it himself, and unless it is desired to reduce supply operations to a mere clerical procedure, all non-essentials and surplusage in departmental and inter-departmental office correspondence should be curbed.

Working for the Tax Collector

INCOME figures for the year 1928, just available, show that railway tax accruals are still pursuing their upward course, reaching a total of $395,066,480 for that year, or $1,079,417 per day. General tax figures for the various states are not so nearly up to date (the latest complete data covering the year 1926), but total railway taxes in 1928 were sufficient to have paid the total state assessed general and special property taxes in 1926 in *all* of the 48 states except New York and Pennsylvania.

Railway tax accruals in 1928 showed an increase of $13,467,890 or 3.5 per cent over the corresponding 1927 total, in the face of a reduction of $32,268,750 in total operating revenues. In consequence, taxes in 1928 consumed 6.4 cents out of every dollar of gross earnings, the highest proportion ever reached.

Railway operating revenues last year amounted to $6,177,761,036, while operating expenses totaled $4,472,480,262, leaving a net operating revenue of $1,705,280,774. Taxes, amounting to $395,066,480, consumed 23.2 per cent of this sum. In other words, tax payments in 1928 required, on the average, the entire net revenue of 85 days operation of *all* the railways in the country. Or, to put it another way, as far as net revenue for their owners is concerned, 23.2 per cent of all the railway facilities in the country might just as well have been operated by the tax collectors.

Translating this percentage into terms of men, money and machinery, it means that the tax-collecting agencies of the federal, state and local governments took all the net revenue from 55,700 average miles of railroad lines. This is greater than the total miles of railways in the eleven Mountain and Pacific states, with North and South Dakota thrown in. On the average, employees to the number of 387,000, with 14,000 locomotives, 12,000 passenger-train cars, 540,000 freight cars, and other railway facilities to the total value of $5,800,000,000, worked throughout the entire year, not for the owners of the railways but to produce sufficient net revenue to pay railway taxes.

Can We Learn from Europe?

RAILWAY operating conditions in this country and in Europe are so widely divergent that when European practice, such as the development of steam turbine locomotives for example, is mentioned, many American motive power officers, figuratively speaking, throw up their hands. They feel that they have nothing to learn from Europe and discount the development, giving it only superficial consideration, if any. Is this attitude justified? Is it wise, in the interest of economy and in the light of past experience?

On November 14, 1928, the Commonwealth Edison Company, Chicago, celebrated with fitting ceremonies, including speeches and the unveiling of a handsome bronze tablet, the twenty-fifth anniversary of the mammoth Fisk Street power station, the first turbine-equipped plant of its kind in America. When this station was constructed in 1903, steam turbine prime movers were an unknown quantity in this country, and all that the designers had to go by was certain studies of steam turbine installations in Europe. The possible economies in steam turbine design were highly attractive, but it represented an innovation in American practice which no one could be sure would be successful. The matter was finally settled by the Commonwealth Edison Company taking the responsibility and risk of building a large turbine station which might have to be remodeled considerably to make it into a reciprocating station, and the General Electric Company taking the risk of manufacturing a large turbine unit which might be unsuccessful and have to be scrapped. As a matter of fact, the first three turbines built were uneconomical and it was not until the fourth machine was designed that the desired efficiency was secured and a plant developed which revolutionized central station practice and contributed substantially to the development of modern standards of living.

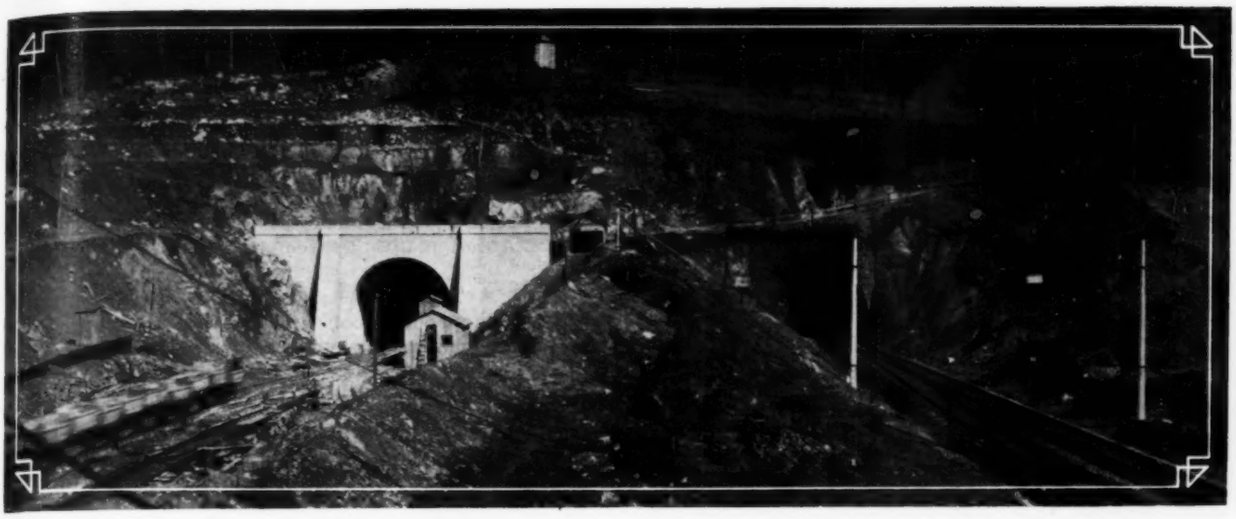
The steam turbine locomotive is just now receiving some consideration in this country. The *Railway Age* is not prepared to say that the turbine locomotive principle is a success, or ought to be tried in this country, but it does appeal for a keener interest in and more sympathetic consideration of all new railroad developments of promise, wherever they may be found.

Increasing Train Tonnage

HEAVY power is a productive source of operating economy, even in cases where its operation requires the strengthening of bridges and other line rehabilitation. In addition to the immediate savings from an operating standpoint, it has other potentialities, such as increased business resulting from improved service. The manner of its utilization is important, however. It should not be left to "lift itself by its own bootstraps." The tangible effect of heavier power is to be found in the statement of gross ton-miles per freight-train-hour An eastern railway has prepared some interesting graphs showing the effect of heavier power on this factor. This road has carried on a program of increasing its mobile power plant for the last eight years. First its track and bridges were overhauled, then the lighter locomotives were replaced with modern equipment. The graph showing gross tons per freight train responded to all this and for two years the curve showed a distinct upward trend. Then it flattened out again and remained stubbornly level for a year or more.

This was distinctly disappointing. An improvement had been made that justified the expenditure, but it seemed that a much greater improvement should be possible. A study of the situation soon brought the limiting factor to light. Not long after the heavy power began to make itself felt in hauling more cars over the railway, the limit of yard capacity also began to appear. There was almost no limit to the number of cars in road haul and the speed of trains was showing a satisfactory increase. There was little use, however, in hauling a heavy train at an increased speed from one terminal to another, only to have it held out for hours because the yard was congested.

Immediate steps were taken on this particular railroad, to relieve the limiting factor, not only in building of new yards, but also in revising yard methods. Two new yards were built and additional trackage installed at other yards, while switching methods were given thorough renovation. Once the limiting factor was removed, the curve on the graph renewed its upward climb and at a considerable and gratifying acceleration.



The East Portals of the Old and New Musconetcong Tunnels

Lehigh Valley Completes Musconetcong Tunnel

Heavy timbering and steel-work to overcome enormous pressures feature construction of new 4,895-ft., double-track bore

ON November 26, 1928, the Lehigh Valley eliminated one of the most serious causes of congestion on its lines; vis, single-track operation through its old tunnel through Musconetcong mountain in the western part of New Jersey. At that time the road placed in service a new double-track tunnel through the mountain, work on which had been under way for more than two years. Having a length of 4,895 ft. and passing through various strata of solid rock and loose wet materials, the new tunnel was a project of considerable magnitude, involving many difficulties and problems.

The difficulties encountered in connection with the new tunnel impress one forcibly with the magnitude of the task undertaken in constructing the old Musconetcong tunnel, and the problems which must have arisen at that time, when the art of tunneling was considerably less developed than it is at present. The old tunnel, which is 4,829 ft. long, was built between 1872 and 1875, to give the Lehigh Valley an outlet to tidewater from its then eastern terminus at Phillipsburg, N. J., on the east bank of the Delaware river.

This tunnel, which was cut through solid rock for the most part, was 21 ft. high and 26 ft. wide, and originally carried two tracks, which were more than adequate for the traffic at that time. Changing conditions, however, principally in the increasing size of locomotives and cars, finally made it necessary to remove one of the tracks and confine the tunnel to single-track operation. As traffic continued to increase, single-track operation within the tunnel became a serious source of delay, particularly during the last few years when it has been necessary for the road to operate a four-track system at each end of the tunnel.

With this condition prevailing, it was apparent that it would be necessary to either enlarge the tunnel or to construct a new tunnel. After a study of the situation, the latter course was decided upon, primarily because of the interference which would occur to traffic in enlarging the old tunnel, and, furthermore, because of the need for a three-track line on this section of the road.

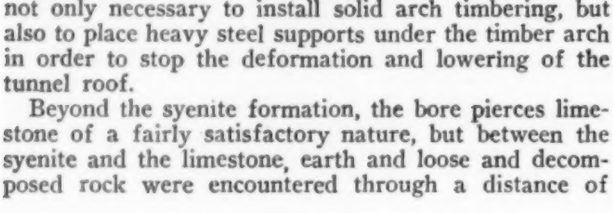
Large Part of Excavation was Rock

The new Musconetcong tunnel, work on which was started in April, 1926, is located parallel with and 130 ft. south of the old tunnel; both of the tunnels entering the mountain on the west side near the town of West Portal, N. J., and emerging from the east side in the vicinity of Pattenburg. The new tunnel, which is 66 ft. longer than the old one, is designed for two tracks, with a section 25 ft. high by 30 ft. wide. Aside from the greater cross section of the new tunnel, there is little difference in the general design of the two tunnels; both are on straight alinement, and for the most part pierce the same rock strata. Like the old tunnel also, the new bore is constructed on ascending grades which intersect near the center; that at the west end being 0.20 per cent and that at the east end 0.176 per cent.

On the whole, a fairly satisfactory material was penetrated throughout the length of the tunnel particularly in the first 3,248 ft. from the east portal, where the excavation was almost entirely in syenite, a hard, granular, igneous rock, differing from granite only in that it is free from quartz. For the most part, this material permitted excavation without shoring, although long sections were encountered in this material

where it was found necessary to use considerable timbering to guard against roof falls. One of the most serious of these sections began about 40 ft. from the east portal and extended about 48 ft. into the tunnel. Here, a decomposed and faulty rock structure was encountered, which developed such pressures that it was not only necessary to install solid arch timbering, but also to place heavy steel supports under the timber arch in order to stop the deformation and lowering of the tunnel roof.

Beyond the syenite formation, the bore pierces limestone of a fairly satisfactory nature, but between the syenite and the limestone, earth and loose and decomposed rock were encountered through a distance of



Profile of the Mountain and Tunnel Showing the Various Materials Encountered

about 187 ft. In this material, tremendous pressures were again encountered, although the true section of the tunnel was maintained by unusually heavy timbering, without the use of steel-work. In the limestone section, which extended for about 760 ft., the rock was solid and of a more or less stable nature, but contained many large cavities which, presumably, at one time held large quantities of water. Within this section, about 270 ft. did not require timbering, although throughout the remaining portion, it was necessary to install full timbering above the springing line in order to guard against roof falls.

Beyond the limestone, and extending for about 700 ft. to the west portal, the most difficult tunneling was encountered. Within this section the bore extended through earth and wet clay, mixed with considerable decomposed and loose rock. Here again excessive pressures developed which required extensive timbering, and within one section of 414 ft., the pressure became so excessive that it was again necessary to resort to steel framing to maintain the shape of the tunnel.

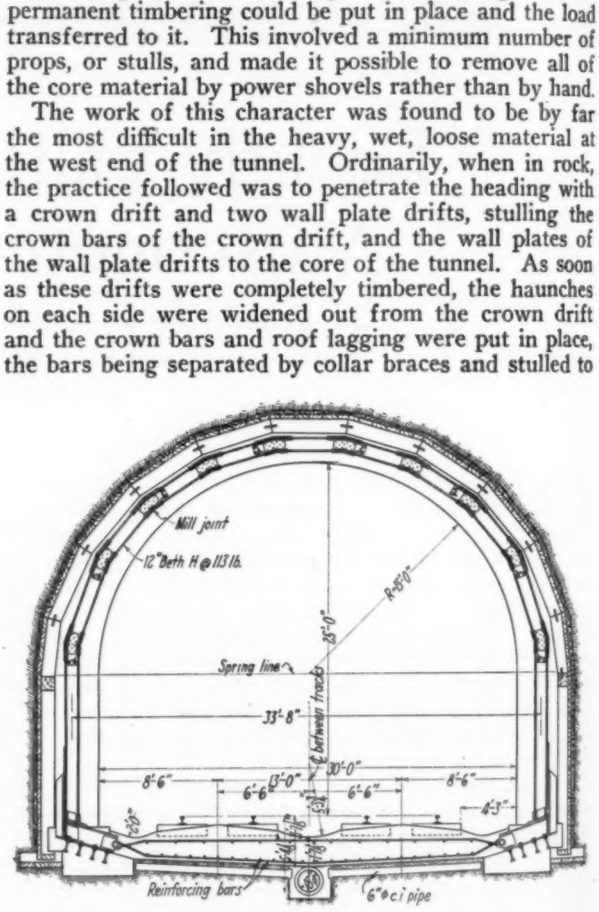
With the exception of 476 ft., the entire length of the tunnel is lined with reinforced concrete, the only unlined section being through a portion of the syenite which was entirely self-supporting. The lining is joined across the base by a heavy, concrete floor slab, this type of floor having been provided primarily with the idea of minimizing track maintenance within the tunnel. At certain points, however, the heavy flooring was provided essentially to resist the pressures which developed against the side walls and the floor. Where these pressures were most severe, the floor slab was heavily reinforced.

Records indicate that much water was encountered in building the old tunnel, the entire workings having been flooded a number of times when large quantities of water in the limestone strata were tapped. Such difficulties were not encountered in the new tunnel, most of the limestone caverns penetrated having been found dry, presumably through the drainage afforded by the old tunnel. At one point, however, in the north plumb post drift through the loose material at the west end, a considerable flow of water was encountered for several days, on the side toward the old tunnel, but this was taken care of readily by a small air-operated pump.

Heavy H-Sections Form Steel "Timbering"

Throughout the construction of the tunnel, the American crown bar method of timbering was employed, this method involving the complete timbering of the arch of the tunnel before the core material is removed. Through this method, the core was used as a support for stulling up all of the temporary timbering until the permanent timbering could be put in place and the load transferred to it. This involved a minimum number of props, or stulls, and made it possible to remove all of the core material by power shovels rather than by hand.

The work of this character was found to be by far the most difficult in the heavy, wet, loose material at the west end of the tunnel. Ordinarily, when in rock, the practice followed was to penetrate the heading with a crown drift and two wall plate drifts, stulling the crown bars of the crown drift, and the wall plates of the wall plate drifts to the core of the tunnel. As soon as these drifts were completely timbered, the haunches on each side were widened out from the crown drift and the crown bars and roof lagging were put in place, the bars being separated by collar braces and stulled to



A Section Through the Completed Tunnel, Showing the Steelwork Used in the Heavy Material at the West End

the core of the tunnel. In practically all of this work, 12-in. by 12-in. crown bars, 4-in. by 6-in. lagging, and 8-in. by 8-in. collar braces were used. The stulls, which were temporary, were ordinarily heavy unframed posts.

As the work of installing the complete ring of crown bars progressed, the permanent crown arch segments were put in place, forming the complete permanent arch from one wall plate to the other. The timbers used in the arch were ordinarily 12-in. by 12-in., and the rings were ordinarily spaced from 2 ft. to 4 ft. center to center, but at many points the pressure encountered was so great that timber segments of 12-in. by 16-in. material were used, and placed tight against each

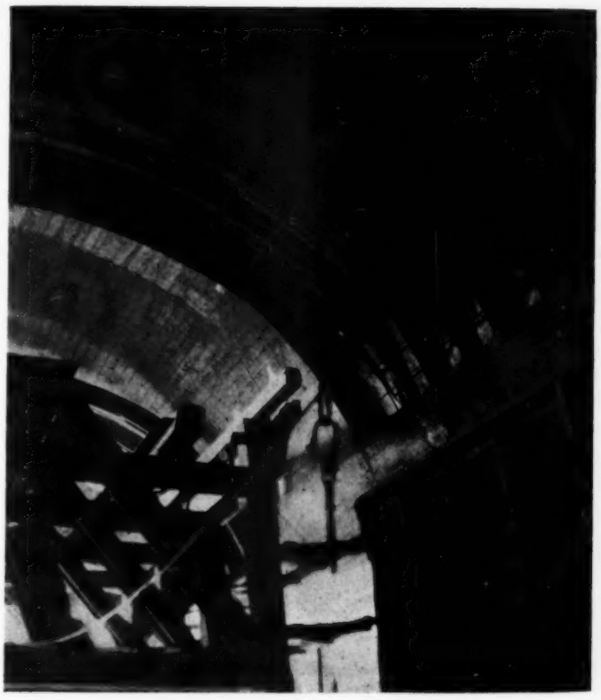
other. Where space between the crown arch rings permitted, the entire outer surface of the arch was covered with 4-in. lagging to prevent the possible infiltration of loose material. As the arch was completed and extended forward into the heading, the space between the crown bars and the arch was packed tightly with rock or timbers in order to transmit the load to the arch, and to permit the removal of the stulls. The remaining work then consisted primarily of removing the core and installing the tunnel lining and floor system.

While this was the general method employed in the rock sections of the tunnel where timbering was required, it was complicated somewhat in the material at the west end of the tunnel, where adequate support could not be found to carry the loads transmitted to the wall plates. Through this section of the tunnel, in addition to drifting at the crown and at the wall plates, it was also necessary to proceed with a plumb post drift on each side so that plumb posts could be installed to carry the loads on the wall plates as the work progressed.

Within this section, the worst of which extended through about 663 ft., every precaution had to be taken to overcome the heavy earth pressures encountered. For a distance of 214 ft., 12-in. by 12-in. pieces were used in the arch ring and plumb posts, spaced 24 in. center to center, and were found sufficient, but in the remaining 449 ft. within this section, the timber sections and posts were increased in size to 12 in. by 16 in., and were placed 12 in. center to center, making a solid timber arch. In spite of this heavy timbering, the pressures developed were so great that many of the 12-in. by 16-in. segments and 12-in. stulling posts failed, and at numerous points the entire arch ring settled as much as two to three feet.

To preclude further settlement of the arch, which was gradually approaching the neat line for the tunnel lining, steel supports, including plumb posts and arches of nine segments, were installed to support the overhead timbering. This steel-work, which at this point extended through a distance of about 414 ft., consisted

A Section of the Tunnel While Lining Work Was Under Way



Nine-Inch H-Beams in Three Curved Sections were Used to Sustain the Timbering at the East End

of 12-in. Bethlehem H-beams of 113-lb. section, in 109 rings, space 3.78 ft. center to center. In spite of this heavy timber and steel framing, so great was the pressure encountered that slight distortion of the arch continued and there was a distinct tendency for the side walls to move inward. To overcome this, it was first planned to continue the steel-work through the invert of the tunnel, completely inclosing it within the concrete floor structure. This plan was abandoned, however, and in its stead, the heavy concrete floor, which has a minimum thickness of about 18 in., was heavily reinforced, both longitudinally and transversely, and both top and bottom, with concrete reinforcing bars.

The only other point where it was necessary to resort to steel framing was in the section of faulty rock near the east end. Here, the original timbering consisted of 12-in. by 12-in. segments, spaced 2 ft. center to center. After being in place about two months, such pressures developed that the timbering began to fail. Intermediate rings were then put in place immediately, which doubled the amount of timber and made the lining solid. This retarded the settlement of the arch, although it still continued until it was decided to resort to steel framing. At this point, the steel extended only from wall plate to wall plate, and consisted of 9-in. Bethlehem H-beams in three curved sections. Altogether, 24 steel rings were placed 2 ft. center to center.

Throughout the remainder of the tunnel where timbering was used, little trouble was experienced with excess earth pressures, the timbering being installed primarily to preclude roof falls. In most cases where such was the case, it was necessary only to build up the arch ring, from wall plate to wall plate, of 12-in. by 12-in. segments, spacing the rings from 2 to 4 ft. center to center as conditions required. An idea of the extensiveness of the timbering required in the construction of the tunnel is gained through the fact that about 2,950,000 board feet of timber was left in the completed

structure, and approximately 180,000 additional board feet of temporary timbering was used during construction. Practically all of the permanent timber was Douglas fir, while native timber was used largely for temporary work.

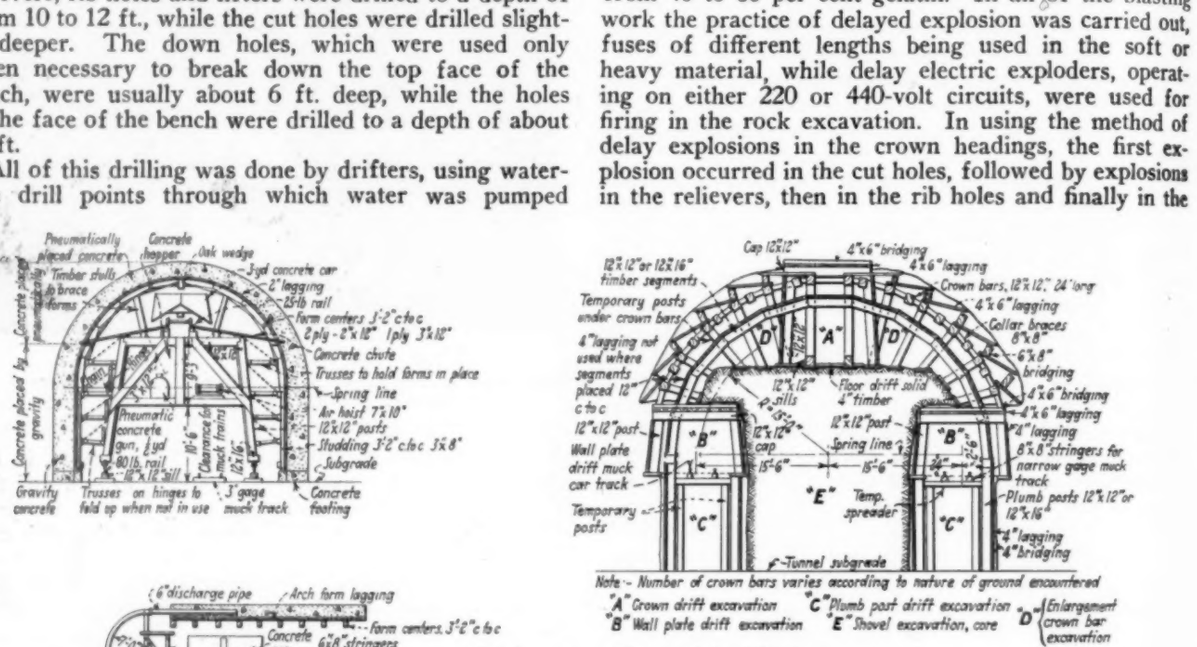
Large Amount of Equipment Necessary

All of the rock excavation within the new tunnel was made by air drills and dynamite, about 1,000,000 lb. of explosives being used in this work. The arrangement of drill holes usually followed in the crown headings included 6 cut holes, 18 relievers, 10 rib holes and 8 lifters. In removing the bench, 7 down holes, 20 bench holes and 5 toe holes were ordinarily driven. The relievers, rib holes and lifters were drilled to a depth of from 10 to 12 ft., while the cut holes were drilled slightly deeper. The down holes, which were used only when necessary to break down the top face of the bench, were usually about 6 ft. deep, while the holes in the face of the bench were drilled to a depth of about 11 ft.

All of this drilling was done by drifters, using water-line drill points through which water was pumped under pressure to keep the drill holes clean. Throughout the major part of the work, from 11 to 15 drills were constantly in operation in the heading at each end, and the magnitude of the drilling operations is evidenced by the fact that each battery of drills required about 10 tons of resharpened drill steel daily to keep it in operation. The depth to which each drill point would cut depended largely upon the character of material encountered, as much as two feet being secured in the softer rock, and as little as eight inches in the harder rock at the east end of the tunnel. As much of the progress in the headings depended upon the condition of the air drills, it is interesting to note that all of the drills were given a complete inspection and overhauling at the drill shops each day, to insure their being in the most effective operating condition.

Air for the operation of the drills at the east end was supplied by two 1,000-cu. ft. air compressors and one 700-cu. ft. compressor, while the air at the west end was supplied entirely by two 1,000-cu. ft. compressors. Each of the compressors was driven by a 200-hp. motor, operating on 23,000 volts, and taking current from a 33,000-volt transmission line which crosses the railroad near the west portal of the tunnel. Each compressor plant was completely enclosed in a frame building and was equipped with an air cooler and an air storage reservoir. Air to the drills was carried in a five-inch steel pipe line, that at the east end extending a maximum distance of about 3,500 ft.

All of the explosive used in the tunnel, which amounted to about 500 tons, was dynamite containing from 40 to 60 per cent gelatin. In all of the blasting work the practice of delayed explosion was carried out, fuses of different lengths being used in the soft or heavy material, while delay electric exploders, operating on either 220 or 440-volt circuits, were used for firing in the rock excavation. In using the method of delay explosions in the crown headings, the first explosion occurred in the cut holes, followed by explosions in the relievers, then in the rib holes and finally in the lifters. Through this method of firing, the first explosion cleared out the crown heading and made room for the rock dislodged by successive explosions in the relievers and the rib holes. Following this same principle, after the top face of the bench had been broken up, the explosions in the face of the bench occurred in order from the top downward, this successively relieving the resistance to succeeding explosions. Electric current for firing was obtained from the 33,000-volt transmission line near the west portal, this power being stepped down to the desired voltage through a bank of transformers.



Construction Details

Upper Left and Bottom—End and Side Views of the Traveler Used in Placing the Concrete Lining. Upper Right—A Section Showing Sequence of Operations and Timbering in the Heavy Ground.

No Steam-Operated Equipment Used in Tunnel

In drifting through the tunnel at each end, power shovels were used exclusively for making the core excavation. In the crown drift, and also in the wall plate and plumb post drifts, however, all of the excavation

was of necessity by hand. In this latter work, the muck was taken out to the face of the core in small push cars operated on narrow gage tracks, a track being provided in each of these drifts. At the face of the core, the excavated material from the drifts was dumped into the open where it could be picked up by the power shovels. The core excavation at the west heading was made by a ¾-yd. steam shovel of the caterpillar type, while at the east end heading, the core was removed by a railroad-type steam shovel. Both of these shovels were adjusted for air operation, and were operated by air from the compressor plants.

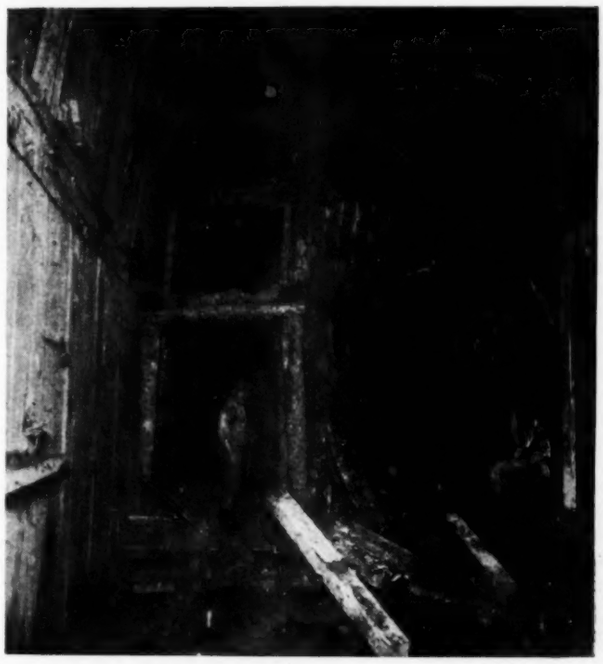
The material at each end was removed by five-yard, side-dump cars, operating on tracks of three-foot gage, about 50 such cars being used in connection with the work. Spotting of these cars at the shovels was done by 7-ton electric "mules", operated by storage batteries, one of which was in service at each heading. Sixteen-ton gasoline locomotives were used to haul the muck cars to the portals, being relieved at these points by steam dinkies which hauled the material to the waste banks. At the east end this haul averaged from one-half to three-quarters of a mile, while at the west end the average haul was considerably in excess of a mile.

In both instances, two tracks were extended into the tunnel, one for empty muck trains and the other for loaded muck trains. At the east end, where the railroad-type shovel occupied the end of one track, much of the delay which would have been encountered in shifting empty cars over a crossover, one at a time, to the loading track was overcome by the installation of a five-ton air hoist on the rear of the shovel, by means of which the empty muck cars were picked up from the inbound track, one at a time, and placed on the loading track for loading. At the west end, where the caterpillar-type shovel was used, all of the shifting of cars was done by the electric mule.

The amount of excavation per lineal foot in the crown drifts at each heading was about 5.2 cu. yd.; that in each wall plate drift about 3.6 cu. yd.; and that in each plumb post drift about 4.5 cu. yd. In addition, about 10 cu. yd. of material was removed per lineal foot in enlarging both haunches, and about 16 cu. yd. per ft. in excavating the core. This involved a total of about 47.5 cu. ft. per lin. ft. of tunnel. In all, about 203,000 cu. yd. of material was removed in constructing the tunnel. Of this, about 162,000 cu. yd. was solid rock, 16,000 cu. yd. was loose rock, and the remainder was earth.

During all of the tunneling work, the men in both headings were supplied with fresh air through a special ventilating system. This consisted of a blower fan at each portal; that at the east portal having a capacity of 9,000 cu. ft. per min., and that at the west portal 3,500 cu. ft. per min.; the air being conveyed to the headings through 16-in. flexible tubing, and 16-in. galvanized iron piping. The galvanized piping in this system was used at the inner end of the ventilating system in each heading, where, owing to the reduced pressure in the long air lines, difficulty was encountered in keeping the flexible tubing fully inflated.

As previously mentioned, the entire length of the tunnel, except for 476 ft. in the syenite rock, is provided with a concrete lining, this varying from 15 in. to over 4 ft. in thickness, depending upon conditions encountered. This lining encloses all of the permanent timbering, and with the exception of where the steel "timbering" was installed, is heavily reinforced by reinforcing bars. In all of this work, a 1-2-4 mix was used, with an admixture of five per cent of Loomite. This admixture, which is essentially talc, produced a concrete of greater workability, but was used primarily for water-proofing purposes.



The Left Half of the Face of the Core Showing the Three Drifts Advanced in Heavy Material

One of the most interesting features in connection with the lining work was the special traveler used for setting up the reinforcement, handling the forms and placing the concrete. This unit, one of which was used at each end of the tunnel, consisted essentially of a high-level timber platform mounted on flanged wheels for movement over a temporary track. The concrete platform, which was at a height just above the springing line of the arch, was connected with the floor level through a timber ramp on a 25 per cent grade. This ramp formed an integral part of the movable traveler, and above it, on each side, were platforms which were used in placing and removing forms. Concrete from the mixing plants was hauled to the traveler in three-yard concrete cars with bottom-opening side doors. These cars were hauled to and from the placing traveler by 4½-ton gasoline locomotives, and, at the foot of the traveler, were hauled up the ramp, one at a time, to the concrete platform. The concrete in the walls or the lining was chuted directly into place behind the timber forms. Above the point where it was possible to place the concrete by gravity, which was at about the springing line of the arch, all of the concrete was placed pneumatically by a 7½-cu. ft., concrete gun. In this work the concrete from the cars was chuted to the gun at a lower level within the traveler, from which it was forced back of the forms in the crown of the arch.

The mixing plants at each end of the tunnel were of the usual type employed in projects of this size, including overhead bins for the aggregates, which were allowed to pass to measuring boxes and then to the concrete mixer installed beneath. Together, these mixing plants turned out approximately 25,000 cu. yd. of concrete for the lining, in addition to the large volume of concrete used in the tunnel floor.

The typical floor section used in the tunnel was installed not only to provide a permanent track support and to overcome the effect of pressures on the tunnel, but also to insure adequate drainage within the tunnel.

As arranged, the two tunnel tracks are placed on 13-ft. centers, and each of the rails, which are of 136-lb. section, rest on 10-in. by 10-in. creosoted oak ties, 3 ft. 6 in. long embedded in the flooring. These ties are spaced 1 ft. 6 in. center to center. Drainage of the tunnel is provided by an invert in the floor through the center line of the tunnel, and by similar inverts along both side walls. These inverts collect all surface water and carry it to manholes which, in turn, take the water to an 18-in. perforated cast iron pipe which extends longitudinally through the center of the tunnel, beneath the flooring. Through the use of perforated pipe, it is expected that adequate drainage will be provided for subsurface water.

Approaches Involved Extensive Excavations

While the actual work of driving the tunnel was the larger and most interesting part of the project, considerable work was necessary in excavating for the approaches at each end of the tunnel. At the west end this excavation extended for a distance of about 1,000 ft., and ranged from a minimum depth of about 20 ft. to a maximum depth of 80 ft. at the portal. At this end, approximately 249,000 cu. yd. of excavation was necessary, practically all of earth or loose rock. This excavation was done by a railroad-type steam shovel, and by the caterpillar-type steam shovel, which was later converted to air-operation and used in the west heading. This equipment was also used at this end for removing about 150,000 yd. of additional material in widening a cut at the west end of the west approach.

In the east approach, there was about 100,000 cu. yd. of excavation, which extended over a distance of about 1,020 ft. All of this excavation, which was removed by the railroad-type steam shovel, used later in the east heading, was earth, with the exception of from 5 to 10 per cent of rock. The maximum depth of cut in this approach was about 61 ft. Other work at this end included grading for about 1,000 ft. in order to make connection with the main line.

In addition to the large amount of power equipment maintained on the work in connection with the tunnel excavation, the removal of the excavated material, the concrete work, etc., the contractor also maintained a complete material storage and shop layout at each end of the tunnel to insure protection to the materials and the proper maintenance of all equipment. The principal shop facilities at each end included a storage shed for small tools, a saw mill for framing timber, a blacksmith shop for repairing equipment and for sharpening picks and bars, an air drill repair shop where the drills were thoroughly overhauled each day, and a drill sharpening shed, which was used exclusively for sharpening drill points.

The equipment within this latter shop unit included a fuel oil drill heater and an air-operated drill sharpener. The importance of this equipment is evidenced by the fact that throughout the major part of the work on the tunnel, an average of about 350 drills were sharpened daily at each drill-sharpening plant.

At each end of the tunnel the contractor also maintained a complete labor camp for housing the construction forces, which included about 200 men at each end of the tunnel during the major part of the work. These camps include substantial frame bunk houses, provided with comfortable beds and all sanitary facilities, two dining halls, a camp commissary, and offices for the contractor and the engineering forces of the railroad. Both camps are supplied with water for sanitary purposes and fire protection, and are lighted by electricity.

The new tunnel was holed through on June 19, the centerline of the two headings meeting within 5/16 in. The point of meeting was 3,171 ft. from the east portal and 1,724 ft. from the west portal, the considerably shorter distance holed through from the west end plainly indicating the greater difficulties encountered in the heavy material at that end, than in the syenite rock at the east end.

All of the work on the new tunnel was carried out under the general direction of Geo. T. Hand, chief engineer of the Lehigh Valley, and under the direct supervision of W. H. Ramsey, resident engineer. The construction was done by the Bates & Rogers Construction Company, Chicago, under the direction of R. E. Ross, district manager.

Consolidation Bill Reported by Senate Committee

WASHINGTON, D. C.

A FAVORABLE report on the Fess railway unification bill, but however with an amendment which revives the idea that the Interstate Commerce Commission shall prepare a general railroad consolidation plan before approving a unification proposed by railroads, was ordered by the Senate committee on interstate committee on February 16 by a vote of seven to two. It was understood that the committee had no real idea of passing the bill in the two weeks remaining of the present session of Congress, but that its desire was to get it off its hands and place it before the country in concrete form as a basis for discussion before another session of Congress.

Most of the text of the bill as passed on by the committee was based on the Parker bill, H. R. 12,620, reported by the House committee on interstate and foreign commerce at the last session of Congress, but whereas the Parker bill and the original Fess bill would have relieved the Commission entirely from the duty of preparing a plan as provided by the law of 1920, the Senate committee at its meeting on February 16 adopted an amendment proposed by Senator Sackett of Kentucky which would require the commission to prepare a tentative plan for its assistance, work on which might be in progress while proceedings were going on under plans proposed by the railroads, so that the commission would not pass on a particular unification without having first surveyed the whole field. While this would not delay the consideration of individual applications, however, it would delay a decision on the part of the commission until the completion of the plan.

The new Section 218 reads:

"The commission is directed to complete, as soon as practicable, a comprehensive study of the transportation facilities of the railroads in respect to the grouping thereof into systems as provided in section 202 and therefrom to prepare and make public a general plan. Such plan shall be tentative only but shall be available for such assistance as the study may properly furnish to the commission in passing upon petitions filed under this title. If such plan or any subdivision thereof, or any material accumulated in connection with such study, is used by the commission it shall, by reference or otherwise, be made a part of the record in the proceedings upon the petition. Action in respect to a petition under this title shall not be delayed or deferred pending the completion of such study and the preparation of

such plan, but no order of the commission approving a plan of unification shall be entered prior to the completion of such general plan."

This differs from the plan directed by the terms of the transportation act because the latter provides that consolidations or unifications proposed by the railroads, to be approved by the commission, "shall be in harmony with such plan."

In its annual reports for the last four years the commission has recommended to Congress that the law be amended to omit the requirement that it prepare a complete plan, and one of the chief objects of the bills that have been introduced has been to comply with such recommendations, but meanwhile there has been a change of heart on the part of some of the commissioners and Chairman Lewis, who appeared before the Senate committee on February 13, said that the commission had taken a vote the day before as to whether it still desired repeal of the plan provisions and it had resulted five to five, one commissioner being absent. The commissioners were, however, unanimous, he said, in favor of proceeding with the work of preparing a plan, which has been dropped for several years, unless legislation on the subject is enacted at this session of Congress.

The Senate committee also adopted another amendment proposed by Senator Sackett to be added to Section 207 under which the commission could authorize a petitioning carrier to acquire by condemnation the properties, rights and franchises of a carrier which it had found should be a party to the proposed unification. At a meeting of the committee on February 15 there had been considerable discussion of the question said to have been raised by Commissioner Eastman as to whether the bill should be made to cover such cases as those in which practical control of a railroad or railroads is acquired by individuals or groups of individuals or non-carrier holding corporations. It was understood to be the position of the committee that this question involves amendment of the Clayton law rather than the interstate commerce act, but Senator Couzens, of Michigan, was said to be not satisfied with the way the committee left the matter and he was expected to make a statement on that point on the floor of the Senate.

In its last annual report to Congress the commission, apparently having in mind the activities of O. P. and M. J. Van Sweringen and their associates, had referred to the "acquisition by individuals or groups of individuals of control of two or more carriers" as "another method of effecting dominance in the affairs of competing carriers that may seriously affect the maintenance of competition and other relations among carriers."

Committee Holds Three Sessions

Following the appearance of Chairman Lewis of the commission before the committee on February 13 in executive session, Commissioners Porter and Eastman conferred with members of the committee on February 14. The committee then debated the bill during another session on February 15 and took a vote on February 16. Those present at the final meeting were Senators Bruce, Couzens, Fess, Glenn, Hawes, Pine, Sackett, Wagner and Watson, several of those understood to be against the bill being absent.

Senator Fess stated that an effort would be made to have the bill considered in the Senate but that the prospects did not look good to him. It had also been indicated at the White House on February 15 that President Coolidge, who has repeatedly urged consolidation legislation in his annual message, was not particularly hopeful of any results at this session. He had conferred with some members of the Senate on the subject, it was stated, and they had thought at that time that it might be possible to secure the passage of a bill, but later developments had not been encouraging.

No effort has been made to bring the Parker bill before the House until it could be learned whether the Senate was inclined to do anything with the bill.

Following the committee's action Senator Fess reintroduced the bill in the form of the committee print as S. 5817.

The text of the more general sections of the bill, Sections 202 and 203, follows:

"AUTHORITY FOR UNIFICATIONS

"SEC. 202. (1) The unification of carriers or of property of carriers, through any method or procedure provided for in this title, is hereby authorized in any case in which, in the opinion of the commission, such unification will promote the public interest. In determining the public interest the commission shall give due consideration to the maintenance of competition between carriers and the prevention of any undue lessening of existing competition, the preservation and improvement of the service afforded by the necessary weak or short lines, the promotion of economy, the affording of better service, the securing of a simplified and more effective regulation of carriers, the ultimate establishment of a number of strong and efficient systems well balanced within themselves and with other systems, and to such other factors as may be in the public interest.

"(2) The unification of carriers or any of the railway properties of carriers, directly or indirectly, after the enactment of the Railway Consolidation Act of 1929, shall be unlawful, unless such unification is in accordance with the provisions of this title or with an order of the commission (entered before or after the enactment of the Railway Consolidation Act of 1929) under paragraph (2) of section 5; but the provisions of this title shall not be held to prohibit, in the exercise of any power conferred by State authority and in accordance with State law—(a) the acquisition by any carrier of shares of capital stock issued by another carrier in an amount not sufficient to constitute control of such other carrier, but no shares so acquired except shares acquired pursuant to subscription rights, shall be voted on any question relating to unification without the approval of the Interstate Commerce Commission; or (b) the acquisition by a carrier of additional shares of capital stock issued by another carrier of which control has been previously lawfully acquired; or (c) the formation of a subsidiary corporation, and the acquisition of all or any part of the securities thereof, for the construction, operation, and ownership of branches, extensions, or terminals, or equipment or facilities to be used in connection with such branches, extensions, or terminals.

"UNIFICATION UNDER AUTHORITY OF THIS TITLE

"SEC. 203. (1) In order to bring about a unification, two or more carriers shall have power to agree on a plan therefor to be carried out under authority of this title.

"(2) The plan may provide for one or more of the following:

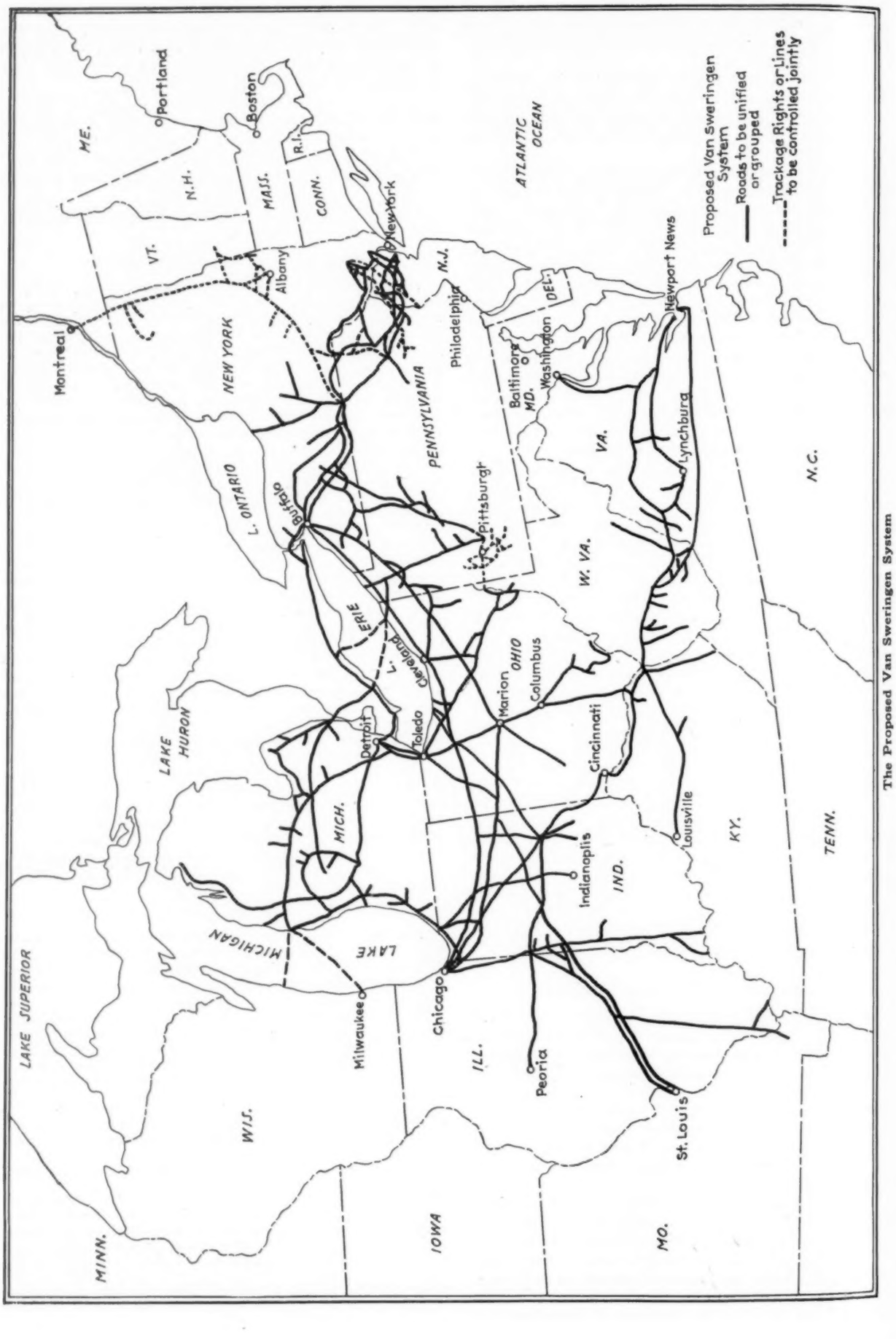
"(a) An acquisition by or transfer to one of the petitioning carriers or a transfer to any other carrier, by purchase, sale, exchange, lease, or otherwise, of all or a part, or the right to operate all or a part, of the properties and franchises of one or more carriers, and, if so desired, the disposition of all or a part of the remaining assets of any such carrier.

"(b) A corporate merger of one or more carriers into one of the petitioning carriers or any other carrier corporation.

"(c) A corporate consolidation of the properties, rights, and franchises of two or more carriers into a single corporation.

"(d) An acquisition of securities by purchase, exchange, lease, or otherwise, issued by a carrier.

"(3) Nothing in this title shall be construed to authorize or provide for the creation, directly or indirectly, of any Federal or National corporation; and all the powers, rights, privileges, and franchises granted by this Act to any corporation now existing or hereafter created are, and shall be deemed to be, supplementary and in addition to, or in modification of, the powers, rights, privileges, and franchises of such corporation granted by its charter, or existing under the laws by virtue of which it was or may be created."



The Proposed Van Sweringen System

Van Sweringen System Proposed

I. C. C. asked to approve grouping along lines of four-system plan

WASHINGTON, D. C.

THE question of the grouping of the eastern railroads in a consolidation plan was placed squarely before the Interstate Commerce Commission in a petition filed with it by the Chesapeake & Ohio on February 20, asking it to hold that the grouping or unification of five railroads now controlled by O. P. and M. J. Van Sweringen and their associates, and seven roads not so controlled, into a single system which would also have a part interest in ten other lines, would be in the public interest. With some changes the plan proposed is along the lines of the Four-Party Plan informally submitted to the commission in 1924 and 1925 by the Van Sweringens, the Baltimore & Ohio and the New York Central, to which the Pennsylvania interposed various objections, for the allocation of eastern lines except those in New England to four systems.

The Baltimore & Ohio, acting separately for itself, presented a similar petition on February 19, and it is considered possible that the New York Central may do so, while it is argued that the logic of the situation may eventually compel the Pennsylvania to take some similar step. The Pittsburgh & West Virginia has already filed with the commission formal applications at variance with the principles of the Four-Party Plan asking it to authorize the P. & W. V. to acquire control of the Wheeling & Lake Erie and Western Maryland.

Specific authority to acquire control of the lines is not asked in the present petition, nor is it stated that the Chesapeake & Ohio would necessarily be the company to acquire control of the others. No proposal is made as to the terms and conditions on which the roads would be acquired but the commission is first asked to decide that the grouping proposed would be in the public interest. If it should hold that it would not be in the public interest it would not be necessary to discuss terms and conditions. The application is filed under paragraphs 2 and 3 of Section 5 of the interstate commerce act and under any other applicable provisions of the act, or any other applicable law.

The Transportation Act of 1920 charged the Interstate Commerce Commission with the duty of promulgating a plan for the consolidation of the railroads. The commission published a "tentative" plan in 1921 and held hearings upon it, but has not made any final and complete plan. In the meantime, the commission has repeatedly asked Congress to relieve it of the responsibility for preparing such a plan. From time to time, the commission has authorized departures from the line-up of its "tentative plan".

In 1923, the principal eastern railroad executives, in part at the suggestion of the commission began a series of conferences, seeking to agree among themselves on a plan for the eastern territory, to be recommended to the commission with their united approval. These conferences were participated in by the Van Sweringen lines, the New York Central, the Pennsylvania, and the Baltimore & Ohio. In 1924 the Van Sweringen lines, the New York Central, and the Baltimore & Ohio agreed in a general way on a plan. Failing to gain the participation of the Pennsylvania, the three presented their plan informally to the commission, known as the "Four Party Plan". The Pennsylvania presented in a minority report a substitute plan of its own. Then in 1927, L. F. Loree, president of the Delaware & Hudson, came forward with a proposal that there be five systems instead of four. That proposal was also subjected to prolonged negotiations among the railroad executives, in which Mr. Loree participated as the sponsor of a fifth system.

Meanwhile, Mr. Loree had acquired control of the Wabash and the Lehigh Valley. Under the Four-Party Plan, the Wabash lines east of the Mississippi river were to have been allocated to the Baltimore & Ohio and the Lehigh Valley was to have been allocated to the New York Central. One result of these negotiations was that the Pennsylvania withdrew its support of the five-system idea and declared in principle for a Four-System Plan. About the same time the Pennsylvania acquired the Delaware & Hudson holdings in Wabash and Lehigh Valley.

Until late in 1928, the executives of the Pennsylvania, New York Central, Baltimore & Ohio and Van Sweringen lines continued conferences in an effort to perfect a Four-System Plan which would have their united support before the Interstate Commerce Commission. Those negotiations were not conclusive and the Van Sweringen Lines determined to act for themselves and present to the commission the direct question of what railroads could be grouped with them as a system, in the public interest.

Accordingly, to take the whole subject of consolidation out of the realm of executive conference, and place it before the commission for action, the Van Sweringen Lines, acting through the Chesapeake & Ohio as the applicant, are petitioning the commission:

1. To hold that the grouping or unification of the railroads named will be in the public interest.
2. To make necessary orders for acquisition of short lines which in the opinion of the commission should be included in the proposed Van Sweringen system.
3. To make necessary orders from time to time to enable the applicant to acquire such railroads as the commission finds it in the public interest for it to acquire.
4. To indicate what must be done to secure the commission's approval of terms and conditions, if the commission is unable or unwilling to approve such acquisitions as it finds in the public interest.
5. And to retain jurisdiction of the application for enlargement, modification or amendment, in order to carry out such a grouping as the commission will find to be in the public interest.

The Railroads Involved

The railroads involved in the application which already are under Van Sweringen ownership or management are the Chesapeake & Ohio, the Hocking Valley, the Pere Marquette, the New York, Chicago & St. Louis, and the Erie. (The Buffalo, Rochester and Pittsburgh is not included, because under the Four-

Party plan that road is allocated to the Baltimore & Ohio and the New York Central).

It is proposed to add to the Van Sweringen group in their entirety the following:

Wheeling & Lake Erie
Chicago & Eastern Illinois
Virginian
Delaware, Lackawanna & Western
Bessemer & Lake Erie
Pittsburgh & Shawmut
Pittsburgh, Shawmut & Northern

It is also proposed that the Van Sweringen group shall have a one-fourth interest (with the New York Central, Pennsylvania and Baltimore & Ohio) in the following, which are classified as bridge or terminal lines:

Delaware & Hudson
Lehigh & New England
Montour Railroad
Pittsburgh, Chartiers & Youghiogheny
Chartiers Southern
Monongahela Railway
Pittsburgh & West Virginia (East of the Ohio river)
West Side Belt

It is proposed that the Van Sweringen group shall have a one-third interest (with the New York Central and the Baltimore & Ohio) in the Pittsburgh & West Virginia west of the Ohio river.

It is proposed that the Van Sweringen group shall have a half interest (with the Baltimore & Ohio) in the Detroit & Toledo Shore Line. (One-half of this line now is owned by the Nickel Plate and the other half is owned by the Grand Trunk.)

In addition, it is proposed that the Van Sweringen group shall have trackage rights ranging in length from 10 miles to 114 miles over various railroads in which they will not have an interest.

Changes from the Four-Party Plan

The proposed plan differs from the Four-Party Plan in that it proposes to place the Wheeling & Lake Erie entirely in the Van Sweringen group, instead of dividing it equally between the Nickel Plate, Baltimore & Ohio and New York Central; and it proposes to lodge the Chicago & Eastern Illinois wholly with the Van Sweringen group instead of dividing it equally with the New York Central.

Under the proposed plan the Van Sweringen group would have 12,265 miles under ownership or lease, and trackage rights over 883 miles; making in all a system of 13,148 miles of railroad. The capital investment would be around $2,500,000,000.

Generally speaking, the proposed system would serve the territory between the Mississippi river and the Atlantic seaboard north of a line drawn westerly along the borders of Virginia and Kentucky, extending north on the westerly side to the tip of the Michigan peninsula and north on the easterly side to Montreal. Its Atlantic seaboard ports would be New York and Hampton Roads.

The Public Interest

The petition points out that the strongest competitors for traffic between Chicago and the west, on the one hand, and New York and the Atlantic seaboard on the other, as well as for traffic between all the principal cities in the eastern territory, are the New York Central, Baltimore & Ohio and the Pennsylvania.

These systems are said to have grown to great size and strength not only by a process of gradual accretion but through acquisition and unification of other railroads since the passage of the Transportation Act in 1920. The system now proposed would add a greater amount of actual and effective competition in service in the Eastern teritory and assure the people of that region a transportation service at higher standard, more economically managed, the petition says, than would be possible or practical if the lines which it is proposed to unify should remain as separate and independent railroads in competition with the three dominant systems now existing. No important city within that territory would be deprived of competition, and traffic would be routed to maintain existing routes and channels of trade, avoiding congested terminals, expediting movement and reducing operating costs. The unified system proposed would be composed of lines which are complementary and supplementary and which in view of their location and physical condition and the nature and volume of their traffic naturally lend themselves to unified operation. Other points made are:

New System Will Better Conditions

The new system will provide more favorable grades and operating conditions, resulting in more favorable and expeditious handling of traffic. It will provide traffic, or facilities, which will on one hand, more fully utilize existing facilities or on the other hand supply existing deficiencies. It will supply more diversified and better balanced traffic. It will provide more uniform adaptability of equipment to traffic requirements by supplying the deficiencies of one road from the surplus of another, both in cars and locomotives. It will provide more efficient, economical and complete use of shop and terminal facilities. It will afford a wider distributon of coal, iron, steel products, agricultural products, miscellaneous manufactures and commodities originating on the various lines and thus extend the scope of the territory each line serves. It will afford single line hauls between points where the constituent lines do not now afford that advantage, although their competitors afford it to the public now. It will result in economies in capital expenditures, standardization of equipment, structures and supplies, and simplified and more uniform practices. It will result in advantages to connecting weak and short lines which are definitely and directly proposed to be considered and provided for. The consolidated financial structure will be well balanced and its prospective earning power will be such that under the established rule of rate making, fair dividends as a whole can be paid after providing for interest on funded debt and a reasonable surplus.

Will Remove Speculation

If the commission will determine to what extent the applicant may unify these properties into one system, the applicant believes it will remove railroad properties in the eastern territory from the field of speculation, bring about the financial stabilization of those railroads and result in bringing into fruition the national policy. The applicant believes it can acquire, and will undertake to acquire, to the extent indicated by the commission, the properties it proposes to bring into a united system, and will submit from time to time for approval of the commission, terms and conditions.

The applicant believes it impracticable if not impossible to submit terms and conditions on which these properties would be acquired until the commission first determines to what extent such acquisitions will be in the public interest and prescribes rules and regulations under which the applicant may proceed to contract for the acquisition of the properties.

There is said to be no substantial parallellism or competition between the present Van Sweringen lines and the roads which it is sought to acquire. It is pointed out that the commission in its decision in the old Nickel Plate unification case said:

"We believe that it is unquestionable that the chief and by far the strongest competitors for traffic between Chicago and the west on one hand, and New York and the Atlantic seaboard on the other, are the New York Central, Pennsylvania and Baltimore & Ohio systems. These systems have grown to their present size and strength by a gradual process of accretion. The system proposed would create a fourth powerful competitor of the three systems named, which have long been strongly entrenched in the territory."

Treatment of Short Lines

Concerning the short lines, the petition contains the following:

"In order that what is generally known as the short line situation in eastern territory may be properly adjusted in the public interest the applicant, the Chesapeake & Ohio Railroad Company, now proposes the following plan for proper settlement of this question which if approved by the commission will be by the applicant carried out when accepted by any short line within the group proposed by the applicant:

"(1) If and when the Chesapeake & Ohio and other railroads in Eastern Territory apply to the Interstate Commerce Commission for authority to group certain railroads in the said territory for ownership of control and operation as a unified system, the applicants will offer to acquire the control of each and every short line railroad which the commission considers ought to be continued in operation and included in such group, or which, independent of such action of the commission, may have been previously acquired by agreement, subject in every instance to approval of the commission as to the public interest and the terms and conditions of such proposed acquisition.

"(2) A short line railroad, which has physical connection with no other carrier than one which is a member of the proposed group, or such group as the commission finally authorizes, will be considered as naturally allocated to such group, if the commission considers such road should be operated, and each of such properties shall be acquired without previous allocation by the commission, if it can be done by agreement between the parties, subject, as a matter of course, to approval of the commission in each and every case. If the parties in any case cannot agree as to the terms, considerations and conditions, if the short line so elect, may be determined as hereinafter provided.

"(3) If and when control of short line railroad is proposed to be acquired as provided in Section (2) hereof, or when allocated by the commission to such a unified system as the commission may finally approve, said system will acquire control of all such short line railroads as can be acquired upon reasonable terms, and if no agreement can be reached between the parties as to the terms, conditions and considerations at which such control of property will be acquired, such short line railroad company may, at its option, cause the value of its property, for the purpose of the proposed acquisition, to be found and fixed (a) by the Interstate Commerce Commission in the first instance, or (b) by submitting the question of value to arbitration supported by contract. The contract, amongst other things, will (1) obligate the short line company to sell, and the acquiring company to buy or otherwise acquire, the control and/or ownership of the property described, and (2) if agreement is not made as to value, that the question of value be then submitted to a board of arbitration, fully authorized to determine the controverted question of value.

"(4) A provision in such written contract, agreeing to settle the controversy as to value by arbitration, shall, at the election of the short line railroad, require such arbitration to be made under the laws of a state, or if the law of a state be not adopted, the agreement shall prescribe for arbitrators, insofar as the same may lawfully be done, the same powers and duties as are set forth in the federal arbitration acts for the arbitration of disputes between carriers and employees and disputes arising out of contracts, maritime transactions, or commerce among the states or territories or with foreign nations.

"(5) In addition to the foregoing, the said contract, in which the issue of value is referable to arbitration, shall contain a provision stipulating in specific terms that the arbitrators, in the determination of price of control, shall hear evidence and take into consideration earning power, geographical location, traffic circumstances, and all the facts which the Supreme Court of the United States has held, or may hold, to be elements or factors in the determination of value in cases of sale or exchange of public utility or quasi-public corporations. The finding of the arbitrators shall in all cases be subject to the approval of the Interstate Commerce Commission."

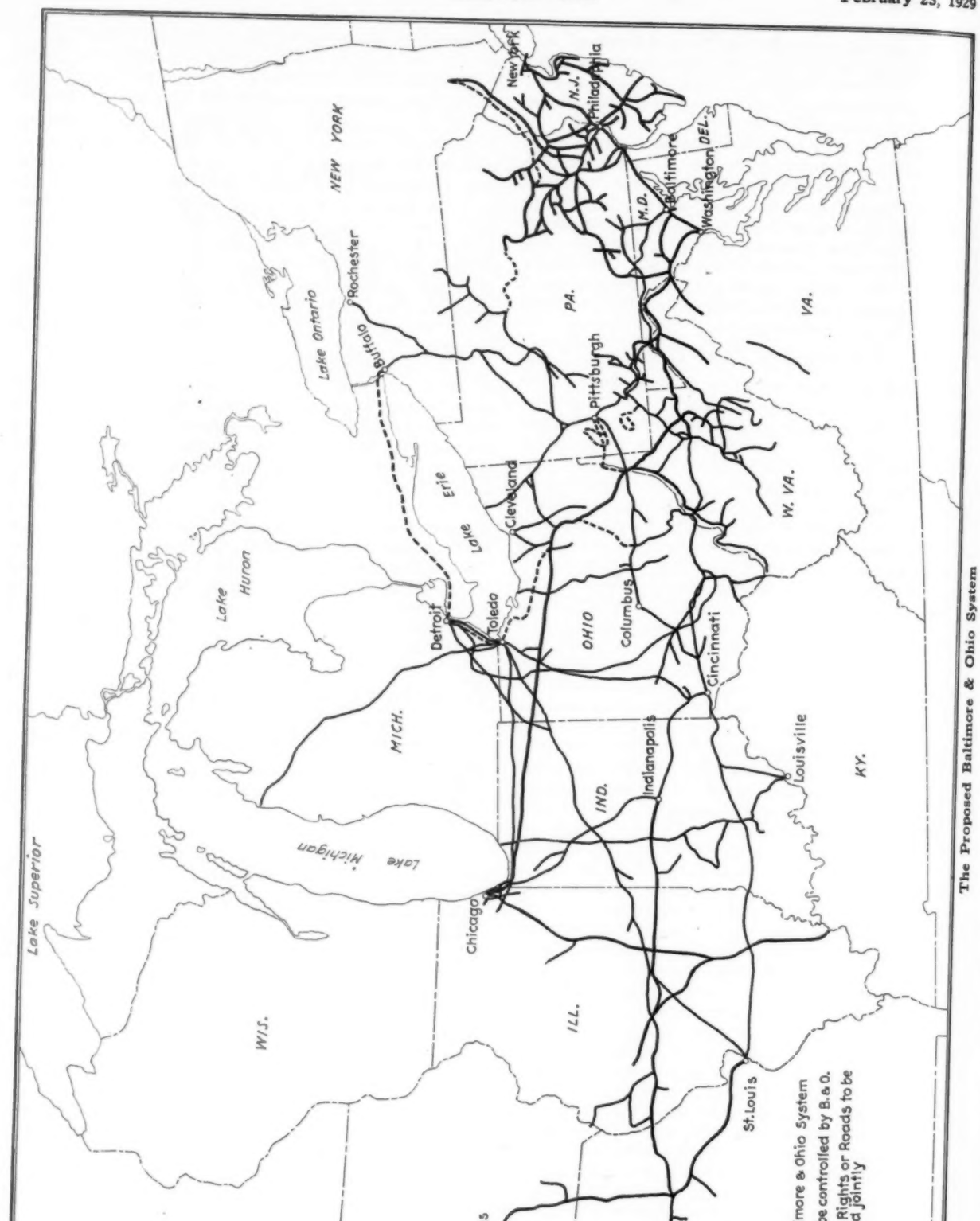
Northern Pacific to Continue Colstrip Mine

THE Northern Pacific has effected an agreement with an independent contractor for the operation of its coal field at Colstrip, Mont., 30 miles south of Forsyth, which involves the handling of 32,000,000 tons of coal and earth during a period of 10 years. The Colstrip field, which is part of the Rosebud field, one of the largest known deposits of coal, has been operated under a contract similar to that recently placed in effect, since its opening in 1924. Loading of coal from the field has gradually increased from that date until at the present time it is being used as locomotive fuel on the main line and most of the branches between Dilworth, Minn., and Spokane, Wash., 1,250 miles, at the rate of more than 1,000,000 tons per year.

Mining Operations

This mining operation is conducted by the open-pit method and the 27-ft. vein of coal is covered by overburden which varies in depth from 10 ft. to 50 ft. The new contract, which has been awarded to Foley Brothers, Inc., St. Paul, Minn., requires the removal of about 20,000,000 cu. yd. of overburden and the loading of about 12,000,000 tons of coal. At the present time the pit is 900 ft. wide and more than 2.5 miles long.

In addition to the three electric shovels now in operation a contract has been placed for the building of a stripping shovel and a loading shovel which will cost about $1,500,000. The stripping shovel, which, when in operation, will have a weight of about 1,000 tons, will be equipped with a 120-ft. boom and a dipper with a capacity of 10 cu. yd. The loading shovel will be equipped with a dipper of 9-cu. yd. capacity and will be able to load coal at the rate of 500 tons per hour.



The Proposed Baltimore & Ohio System

Enlarged B. & O. System Proposed

Desires control, rather than unification, of Reading, Western Maryland, B. R. & P., D. T. & I., C. I. & L., Wabash, Ann Arbor

THE Baltimore & Ohio on February 19 filed with the Interstate Commerce Commission an application for authority under paragraphs 2 and 3 of section 5 of the Interstate Commerce Act to acquire control over certain carriers in Eastern territories. The application provides for control by lease or stock purchase or "in any other manner not involving the consolidation of such carriers into a single system for ownership and operation."

The application of the Baltimore & Ohio came shortly before an application for similar authority on the part of the Van Sweringen interests. The applications differ, however, in that that of the Baltimore & Ohio is somewhat more specific in the type of control which it desires at this time, whereas the Van Sweringen application leaves the choice of the form of grouping or amalgamation entirely to the discretion of the Commission. It does not insist that the system be built on the Chesapeake & Ohio, the applicant, as a base, whereas in its application, the Baltimore & Ohio is the only line considered as the foundation for the proposed enlarged Baltimore & Ohio system.

In the main, there is no important overlapping in the desires set forth by the two applicants, although in a few minor cases there is some slight disharmony in the two plans.

What the B. & O. Seeks

The Baltimore & Ohio desires to acquire control under paragraphs 2 and 3 of section 5 of the Interstate Commerce Act of the following lines:

Reading, including affiliated lines and the Jersey Central
Lehigh & Hudson River
Western Maryland
Buffalo, Rochester & Pittsburgh
Buffalo & Susquehanna
Detroit, Toledo & Ironton
Chicago, Indianapolis & Louisville
Wabash
Ann Arbor

It wishes to have not less than one-fourth interest in and joint control with the Pennsylvania, the New York Central and the Van Sweringen group of:

Lehigh & New England
Montour
Pittsburgh, Chartiers & Youghiogheny
Pittsburgh & West Virginia

The company also wishes to own jointly with the Van Sweringen group the Detroit & Toledo Shore Line. The application embraces not only the properties themselves mentioned above, but also the control of all properties controlled by these companies and all interests and rights appertaining to these companies and their subsidiaries.

The application continues:

Trackage Rights

"Your applicant believes that as a necessary part and parcel of the system herein proposed to be created provision should be made whereby the applicant's proposed new short line from Chicago to New York, testified to in the proceeding before the Commission known as Docket No. 12964—In the Matter of the Consolidation of the Railway Properties of the United States into a limited Number of Systems—may be made effective. For such purpose your applicant should acquire trackage over the lines of the Pennsylvania from the connection between the Pennsylvania and the Buffalo & Susquehanna at Driftwood Junction, Pa., thence to a connection with the Reading at Newberry Junction, Pa., a distance of approximately 80 miles. Or, alternately,

"From the connection between the Pennsylvania and the Buffalo & Susquehanna at Driftwood Junction, Pa., over the lines of the Pennsylvania to the connec-

System As Proposed by Baltimore and Ohio

Year Ended December 31, 1927

	Miles Operated	Investment in Road and Equipment	Gross Revenue	Net Railway Operating Income	Rate of Return on Investment
Baltimore and Ohio System (incl. B. & O. C. T. R. R., S. I. R. T. Ry. and Dayton & Union R. R.)	5,800	$915,709,061	$253,453,470	$46,291,319	5.06%
Reading System	1,605	411,189,913	103,546,750	17,056,726	4.15%
Central R. R. of N. J.	691	202,587,653	58,745,712	10,383,653	5.13%
Chicago, Indianapolis & Louisville Ry.	650	52,469,295	18,542,197	2,822,709	5.38%
Western Maryland Ry.	804	147,417,902	21,866,170	6,131,593	4.16%
Ann Arbor R. R.	294	22,872,828	5,615,112	780,182	3.41%
Buffalo, Rochester & Pittsburgh Ry.	602	72,473,314	17,522,081	1,920,665	2.65%
Buffalo & Susquehanna R. R.	254	11,173,222	1,530,183	161,405	1.44%
Detroit, Toledo & Ironton R. R.	496	44,794,606	8,671,353	635,924	1.42%
Wabash Ry.	2,524	277,945,726	67,108,154	9,611,677	3.46%
Lehigh & Hudson River R. R.	97	7,257,189	3,362,338	574,097	7.91%
½ Detroit & Toledo Shore Line R. R.	25	3,866,569	2,363,839	486,734	12.59%
¼ Pittsburgh & West Virginia Ry. (East of Ohio River)					
¼ West Side Belt R. R.	18	8,198,043	785,675	373,334	4.55%
½ Lehigh & New England R. R.	54	5,167,010	1,449,614	356,283	6.90%
¼ Montour R. R.	14	2,148,955	324,990	106,843	4.97%
¼ Fittsburgh, Chartiers & Youghiogheny R. R.	6	724,081	128,999	22,162	3.06%
½ Chartiers Southern Ry.	3	915,936	Included in	Monongahela Ry.	
¾ Monongahela Ry.	43	5,125,040	1,932,479	560,129	10.93%
Trackage	161	.....	.....	.....	.....
Total	14,141	$2,192,036,343	$566,949,116	$98,275,435	4.48%

tion with the New York Central at McElhatten, Pa., a distance of approximately 63 miles, and thence over the lines of the New York Central from the connection with the Pennsylvania at McElhatten, Pa., to the connection with the Reading at Newberry Junction, Pa., a distance of approximately 18 miles.

"Also, as a part of the system of your Applicant as herein proposed, it is desirable that your Applicant should obtain trackage over the Wheeling & Lake Erie as follows:

"1. From the crossing of the Wheeling & Lake Erie and Baltimore and Ohio tracks at or near Canton, Ohio, to the connection between the Wheeling & Lake Erie and Baltimore and Ohio at or near West Zanesville, Ohio, a distance of approximately 82.5 miles.

"2. From Creston, Ohio, to Toledo, Ohio, including the use of the Wheeling & Lake Erie's Toledo Belt Railroad from the main line of the Wheeling & Lake Erie to the connection of the Toledo Belt Railroad with the Baltimore and Ohio near Fassett Street, a distance over the main line of the Wheeling & Lake Erie of approximately 108 miles and over the Toledo Belt Railroad of approximately 4 miles.

"3. Trackage over Pere Marquette or, alternately, over Detroit & Toledo Shore Line, from Toledo into Detroit."

Plan Would Increase Effective Competition

"The lines of railroad operated or controlled by the several carriers, for the control of which by the applicant approval is sought by this application, are complementary and supplementary to the lines of railroad constituting the system of the applicant, and especially when considered in the light of the relationship between the system suggested to be created through their control by the applicant and existing systems in the Eastern Territory, such as the important and powerful systems of the New York Central and the Pennsylvania as well as the proposed Chesapeake & Ohio-Nickel Plate-Erie system, with each of which the applicant competes, and also when the proposed system is viewed from the standpoint of the requirements of the Transportation Act of 1920 looking to the creation of fewer better balanced systems.

"That while competition exists in varying degree between the applicant and some of the carriers, control of which is sought to be acquired by this application, such competition as it now exists is of little, if any, real value in the public interest, being to a substantial extent uneconomic and, if and to the extent it may be diminished by the approval of and carrying out of the acquisitions herein sought, such loss or change in kind of competition will be more than compensated by the stronger and healthier competition supplied by the system proposed to be created through the acquisitions herein proposed by the applicant, and by means of which improved system the applicant will be enabled to compete on terms of more substantial equality with the systems of the New York Central and Pennsylvania and with the Chesapeake & Ohio-Nickel Plate-Erie as it is proposed to be created. If the system proposed to be created by the acquisitions herein sought on the part of the applicant be approved and carried out, no important cities or towns or sections of the country will be deprived of competition, but, on the contrary, competition of a more effective and economic character will be supplied them."

The Public Interest

The application further states that the proposal would be in the public interest and continues that:

"While for many years the applicant has been one of the more important carriers operating in the Eastern Territory, that is to say, east of the Mississippi River and north of the Ohio River, exclusive of the New England, it has, during all this period, been compelled to operate in competition with other outstanding systems in this territory and chiefly those of the New York Central and Pennsylvania, which for many years have been substantially greater and more complete systems than your applicant from every standpoint, the mileage of each of them, directly owned or controlled, being approximately twice as great as the mileage of that of your applicant. Although the system of your applicant has, during the years past, been increased to some extent, your applicant has never been able to approach the size and competitive strength of the New York Central or of the Pennsylvania systems, which by all tests far exceed all other systems in the Eastern District, nor has it been able to secure the advantages and the competitive opportunity which obtain by reason of the larger systems reaching and serving a far greater territory than that reached and served by the system of your applicant. While the system of your applicant reaches Chicago and St. Louis in the West and Baltimore and Philadelphia in the East over its own rails, its chief development has been in Maryland, Ohio, West Virginia and western Pennsylvania. Its chief handicap has been the fact that for so many years it has been unable to provide for the movement, in a satisfactory manner, of its large and growing traffic to and from the Port of New York, where it has extensive terminals, over rails owned or controlled by it, it being dependent for access to the Port of New York, and its terminals there located, upon the Reading and the Central of New Jersey. The applicant has as the Commission is advised, a substantial stock interest in the Reading, which owns 52 per cent of the capital stock of the Central of New Jersey, and while for many years it has sought to acquire sole control of the Reading System it has not yet been able to bring about the accomplishment of this desirable and necessary result and so recognized in the Commission's tentative plan.

"The need of the system of your applicant as it now exists and when considered in relationship to the other stronger and long existing systems, the Pennsylvania and the New York Central, received the very careful consideration of this Commission and of Professor Ripley, who was employed by the Commission to investigate and report upon the problem in aid of the preparation of the tentative plan for the consolidation of railroads required of the Commission under paragraphs 4 and 5 of Section 5 of the Interstate Commerce Act as amended by the Transportation Act of 1920. The handicaps under which the system of your applicant as at present constituted labors, especially in relation to the systems of the New York Central and Pennsylvania, were carefully considered in such report and in their more important aspects were stated to be as follows:

This property has less than one-half the mileage of the Pennsylvania. Its revenue ton mileage in 1917 was scarcely more than one-third as great.

It has considerable extent, reaching Chicago and St. Louis and the neighborhood of Philadelphia upon its own rails * * *.

* * * but it has no access of its own into New York, being dependent upon the favor of the Reading and the Central of New Jersey.

It is a powerful trunk line but with an extensive development only in the middle field of Ohio, West Virginia and Western Pennsylvania.

It is attenuated both east and west.

And in order to strengthen it financially and as a competitive factor throughout trunk line territory it needs upbuilding at each of its extremities.

Independent entrance into New York over its own rails is essential to a Baltimore and Ohio group *if it is to continue to compete effectively with the other systems.* (Italics ours.)

It already owns substantial freight terminals on Staten Island, with a warehouse and delivery yard on Manhattan Island.

But these properties, operated with Baltimore & Ohio forces, are obliged to use other roads as an approach.
The satisfaction of this need is imperative.

The application cites history in connection with the consolidation provisions of the Transportation Act, the hearings on the Commission's tentative plan and then continues:

"In the absence of the adoption and promulgation by the Commission of a complete plan for the consolidation of railroads into a limited number of systems, a very impressive public sentiment developed suggesting that, in order to reconcile the conflicts of view which had developed in the hearings upon the tentative plan and as a possible aid to the Commission in the solution of the problem for the Eastern District, the railroads directly interested should themselves endeavor to develop and offer to the Commission a plan for the formation of a limited number of systems in the Eastern District."

The application then tells of the effort of the companies to come to an agreement regarding the four-system and their lack of success. Proceeding with this plan as a general basis the applicant then proceeded to add to its holdings of Reading stock. Its holdings of this stock now are 18.78 per cent of the common, 24.44 per cent of the first preferred and 35.77 per cent of the second preferred, or 25.01 of total outstanding stock. The Reading, the application points out, controls the Jersey Central by ownership of 52 per cent of it stock. These two roads not only afford the Baltimore & Ohio its access to the Port of New York but, via the Shippensburg gateway, together with the Western Maryland form the "historical interior short route."

The applicant says further, that in proceeding with its plan, it acquired about 40 per cent of the stock of the Western Maryland in February, 1927, and now holds 42.88 per cent thereof. Of the relationship of the Western Maryland to the proposed system the application says:

"For many years a close relationship has existed between the lines of the Western Maryland and those of your applicant. Much of the tonnage of the Western Maryland orginates in territory served by your applicant and moves over its road to reach the lines of the Western Maryland. The lines of the Western Maryland, with those of the Reading system and Central Railroad, form a through route which is one of the applicant's principal outlets to central Pennsylvania, New York and New England. The tonnage of the Western Maryland interchanged with your applicant constitutes over 40 per cent of the total tonnage both local and interchange of the Western Maryland and nearly 50 per cent of the Western Maryland's interchange with all lines. The lines of the Western Maryland and those of your applicant bear such a physical relationship to each other as to be susceptible of many working arrangements advantageous to the public, and from an economical standpoint the lines of the Western Maryland may be operated most advantageously as part of the system as proposed to be formed by the applicant."

Of the Buffalo, Rochester & Pittsburgh the application says:

"While your applicant has not acquired any of the shares of stock of the Buffalo, Rochester & Pittsburgh, the relationship between it and the Buffalo, Rochester & Pittsburgh has been close over a period of approximately 30 years and has important advantages to your applicant, to the Buffalo, Rochester & Pittsburgh and to the public. For economic reasons your applicant has practically abandoned its own Mt. Jewett route in favor of the line of the Buffalo, Rochester & Pittsburgh for through traffic, while the Buffalo, Rochester & Pittsburgh by virtue of contracts between it and your applicant uses approximately 80 miles of your applicant's line between Butler Junction and New Castle and Ribold Junction and Pittsburgh, and also through such contracts the Buffalo, Rochester & Pittsburgh becomes an initial carrier in an important part of the Pittsburgh industrial territory with access to important traffic-producing lines in Pittsburgh. Through the course of years the relationship between the two companies has continued to grow so that they are in an important measure interdependent and which interdependence is susceptible of further development in the public interest. And your applicant has assurances that the preferred and common stock of the Buffalo, Rochester & Pittsburgh may be acquired by your applicant upon a reasonable basis."

The Plan's Advantages

The application gives general approval to the four system plan and says "that if said two systems (i.e. the B. & O. and Van Sweringen systems) be approved then the following advantages, as in the four system plan, will be realized:

FIRST: Nearly all of the principal producing and consuming centers of the territory may be served by two or more and in many instances by all of the systems.

SECOND: Each of the systems may be ramified throughout the territory and may be in a position to contribute to the widespread distribution of the traffic of the territory.

THIRD: Each of the systems may have adequate access to the sources of fuel supply and each may participate to a large extent in the commercial distribution of coal.

FOURTH: Each of the systems may have access to at least two of the five principal North Atlantic ports, though no one of them may have access to all of said ports, and thus both the service to and competitive relationship of the ports may be maintained and safeguarded.

FIFTH: Each of the systems may have substantial access to the lower lake ports and thus participate in the transportation of the large volume of coal and ore traffic passing through these ports.

SIXTH: Mileage, property investment, gross earnings and resulting net railway operating income may be more nearly equalized than would be possible in the case of the larger number of systems.

SEVENTH: The systems may, generally speaking, have equality of opportunity to serve the public throughout the territory, to provide adequate facilities and make necessary extensions from time to time with reasonable expectation of securing additional traffic.

EIGHTH: A greater amount of actual and effective competition in service may be assured by four systems well articulated than by seven or eight systems, more or less incomplete.

Short Lines

On the subject of short line railroads, the application divides these into three categories: (1) Those connecting with the proposed Baltimore & Ohio system alone; (2) those connecting with the Baltimore & Ohio and some other system; and (3) terminal short lines. The applicant is willing to include such short lines in the first group as the Commission desires to be included upon a reasonable basis to be determined by agreement or by the Commission. Where the Commission believes that short lines in the second group should be allocated to the Baltimore & Ohio rather than to some other system, the applicant agrees to include them under the same conditions as roads of the first group. The third group, terminal lines, the applicant feels, should generally speaking be continued in an independent status, but is willing to assume its proportionate obligations regarding them in any event. The applicant further states that it is co-operating with the American Short

Line Railroad Association in the endeavor to secure a reasonable and fair settlement of this question.

Trackage rights the applicant would endeavor to secure by negotiation with the lines involved subject to the approval of the Commission.

The applicant states that it has no contracts for control of the carriers mentioned "and believes that it is impracticable, if not impossible, to attempt to negotiate for the same until the Commission shall first find the extent of which the acquisitions of control herein proposed are in the public interest. That if the Commission shall approve the acquisitions of control herein proposed from a transportation standpoint, or shall approve the same with such modifications as may seem to the Commission to be in the public interest, that very substantial progress of an important preliminary nature will be brought about to the ultimate accomplishment of the Congressional policy of consolidation into a limited number of well balanced systems. That with such approval it will become practicable to negotiate for and determine all of the terms and conditions under which the several carriers proposed to constitute the new system of the applicant may be acquired and to submit such terms and conditions to the Commission for its consideration and approval, or for a declaration from the Commission of rules and regulations, terms and conditions for their acquisition as may seem in the judgment of the Commission to be just and reasonable."

In the premises the applicant requests the Commission:

1. To find that the acquisition of control of each of the carriers herein proposed by the applicant is in the public interest from a transportation standpoint.

2. That the Commission retain jurisdiction of this application to the end that by such supplemental petitions, or other procedure of supplementary nature, the applicant may be enabled to submit to the Commission and the Commission be enabled to take such further steps and make all such necessary orders as may be proper and necessary in connection with the terms and conditions for the acquisition of control of any or all the carriers which the applicant herein proposes to acquire, and for the acquisition of such short or weak lines as the Commission shall find necessary to become a part of the system of the applicant herein proposed to be created, and for the consideration and approval of such trackage rights as may be hereafter submitted to the Commission for its consideration and approval, and for the consideration and action upon all such other matters as may be necessary in connection with the acquisitions herein proposed.

Refrigeration Charges Reduced

I. C. C. criticizes relations between railroads and Fruit Growers Express

WASHINGTON, D. C.

PRESENT refrigeration charges on fruits, vegetables, berries and melons from points in Florida, Georgia, South Carolina and Virginia to destinations in trunk-line and New England territories were found unreasonable in a report and order made public by the Interstate Commerce Commission on February 18 after a detailed investigation of the cost of the service to which they apply. Refrigeration charges on peaches from points in Georgia and North and South Carolina to destinations in official and southern territories and to certain destinations in western territory were held not shown to have been unreasonable.

Effective on April 15 the roads are ordered to cease from charging more than specified percentages of the present charges for standard refrigeration service as follows:

From Florida: citrus fruits and vegetables, 85.50; berries, 77; other fruits and melons, 92. From Georgia: fruits, berries, vegetables and melons 84; from South Carolina, fruits, berries and melons, 86.50; vegetables, 88.50; from North Carolina: berries 80.50; vegetables and melons, 90; fruits, 94; from points in Virginia west of Chesapeake Bay, 95.50.

Owing to the limitations of the record, the report says, which was largely confined to standard refrigeration service and to traffic moving through Potomac Yard and Norfolk, the findings are restricted to charges from origin territory involved to destinations in trunk line and New England territories. However, respondents are directed to readjust their charges for other forms of refrigeration service and to destinations in central territory in line with the findings.

No evidence was offered, the report adds, showing to what extent present charges for refrigeration service have tended to bring about the financial situation surrounding the growers. The most substantial difficulties appear to be due to marketing problems and selling costs. The commission has kept the provisions of the Hoch-Smith resolution in mind and has given them "all the weight which properly and lawfully can be given in an adjustment where charges are based upon the cost of the service plus a reasonable profit."

The report declares that the arrangements between the Fruit Growers' Express Company and the respondent railroads are open to serious criticism. On this point it says in part:

Relations Between Railroads and Express Company

As indicated at the outset in this report, the express company, while not a common carrier subject to our jurisdiction, is controlled by 18 respondents which own all of its stock, and it acts as the agent of 56 respondents in the performance of certain services. We deemed it our duty in this investigation for two principal reasons to examine, so far as practicable, not only in to the costs incurred by the express company in the icing service, but also into its affairs generally, including its relations with respondents.

In the first place shippers and carriers both have a tendency to become confused in their association of the express company with the icing service here under consideration. For example, shippers are inclined to argue that because the express company does not haul the ice or switch the cars, and because it receives the refrigeration charges in their entirety, it follows that these elements of cost ought not to be included in these charges. Similarly they argue that because all car repairs, including bunker repairs, are considered in determining the amount of the car mileage rentals which respondents pay to the express company for the use of the cars, it follows that bunker repairs ought not also to be included in determining the amount of the refrigeration charges. By much the same line of reasoning respondents are inclined to argue that if a reduction in re-

frigeration charges would leave the express company with plainly inadequate net income, it follows that such reductions would be unjust. This was, indeed, strongly urged by respondents at the oral argument.

The second reason for examining into the affairs of the express company generally is the fact that, being wholly the creature of certain respondents, it may be used by them as a vehicle for converting earnings subject to recapture under section 15a of the interstate commerce act into income, taking the form of dividends on express company stock, which is not subject to recapture.

On December 31, 1926, the express company had an investment of $24,588,309 in cars and $1,445,419.97 in other physical property. It had capital stock outstanding of a par value of $4,254,400 and equipment trust obligations of a face value of $15,005,980. Its depreciation reserve on that date, mostly for cars, amounted to $5,387,980, and its profit and loss surplus totalled $3,441,516. Its net income for the year, after the payment of all charges, including taxes, rentals, interest and discount, amounted to $1,074,307, or about 25 per cent upon outstanding capital stock. From May 1, 1920, to December 31, 1926, it paid dividends in the following years at the following rates:

Year	Per Cent
1922	10
1923	7
1924	10
1925	10
1926	10

Of these devidends, $819,940 were paid in cash and $688,800 in stock.

Terms of Express Company Service

Under its agreements with the 56 respondents the express company undertakes to furnish refrigerator cars and protective service. The terms differ in some respects, but they all provide in substance that

(1) The express company shall receive the stated refrigeration charges provided by perishable protective tariffs lawfully in effect at the time, wherever the traffic moves under such charges.

(2) The railroad shall move the cars of the express company to icing stations for initial icing, and from initial icing station to loading stations, and to and from icing and reicing stations, including in such movements the cars of the express company in transit, and shall perform all switching at such icing and reicing stations as may be necessary to admit of the prompt icing and reicing of cars.

(3) The railroad shall pay to the express company as rental for the use of each of said cars run over the lines of the railroad, both loaded and empty, the mileage or per diem established by the American Railway Association and in force at the time or as established by tariffs lawfully in effect, and the express company shall endeavor to direct the movement of its cars so that the loaded mileage will approximate the empty mileage.

(4) The railroad shall make no charge against the express company for movement of dry or iced refrigerator cars over its rails for protection of business covered by the agreement, nor shall it make any charge for the movement of ice contained in the bunkers of such cars.

In the year ended December 31, 1926, the operating revenue of the express company was derived from the following sources:

(1) Car Mileage	$5,840,292.42
(2) Refrigeration Revenue	5,798,950.44
(3) Protective Service	898,585.00
(4) Ice Sales Revenue	141,446.05
(5) Miscellaneous Revenue	962.85

Item (2) is the revenue received from the stated charges here in issue. Item (3) consists of payments by respondents to the express company in cases where no stated charge is assessed for the refrigeration service and the shipper is charged on the cost-of-ice basis or pays no charge other than what may be included in the line-haul rate, as in the case of certain less-than-carload service. These payments by respondents usually take the form of amounts per car, ranging from $6.50 to $15, and are intended to cover service rendered by the express company apart from the furnishing of the ice. Item (4) is clear profit. It appears that when the express company furnishes ice for which the shipper pays at tariff rates under the cost-of-ice basis, respondents pay the express company for the ice actual cost but not less than the tariff rate. The profit, where the tariff rate exceeded the cost, amounted to $141,446.05 on ice sales totalling $2,296,261.35. The remainder was credited to ice expense.

It will be seen from this statement of revenue that the mere fact that a reduction in refrigeration revenues might result in inadequate net income would not prove the injustice of such a reduction, for it would first be necessary to determine whether or not revenues received from other sources were adequate. Our accountants arrived at the conclusion, after an analysis of the accounts, that the car mileage rentals fall considerably short of adequacy. These rentals are not here in issue, and we shall not attempt to reach conclusions with respect to them, except to say that the analysis does indicate that the subject merits careful consideration by respondents.

It is clear, however, that the arrangements between the express company and respondents are open to serious criticism. The stated refrigeration charges are based in part upon expenses incurred in hauling ice and switching cars. These expenses are in no way incurred by the express company, but it receives the compensation for them, and the railroad companies which actually incur the expense receive nothing. Many of these companies are not stockholders of the express company and hence receive no indirect compensation for their services in the shape of dividends. The refrigerator charges also include an allowance for bunker repairs, but all of the repairs to the cars, including those made to refrigeration devices, are presumed to be considered in the determination of the car mileage rentals. If these rentals are adequate, therefore, the express company receives double compensation for its services in making bunker repairs. On the other hand the express company, as we have seen, performs extensive services for the 56 respondents which have agreements with it, in connection with the supervision of the supply, movement, inspection and cleaning of the refrigerator cars and the inspection of their lading. This supervision has no direct connection with the icing service and pertains instead to the transportation service. For these supervisory services the express company receives no direct compensation from respondents.

It is evident that these arrangements are of no immediate concern to the shippers. For example, if ice haulage involves expense which ought to be covered by the stated refrigeration charges, the shippers should pay charges so computed and they are not directly wronged if, after they have paid them, respondents turn the money over in its entirety to an express company which has done none of the hauling. These matters are, however, of general public concern, for they involve the prosperity of particular carriers and also the amounts of income which should properly be recapturable under section 15a. They are not matters which we have power to correct by order, but they are matters concerning which we are undoubtedly authorized to express our views. In our opinion the existing arrangements should clearly be readjusted so that any amounts which shippers pay through the refrigeration charges for the hauling of ice and the switching of cars should go to the carriers which perform those services, and so that the express company will not receive duplicate compensation for bunker repairs. Furthermore, to the extent that the express company performs services for certain respondents which pertain to transportation service, fair compensation should be paid directly for such services and it should not be paid indirectly through the refrigeration charges in a manner which precludes an accurate check.

We are further of the opinion that when the carriers perform a part of their transportation service through a separate agency having a monopoly and not subject to the restraint of competition, they should, as they do here, control that agency, but its accounts and the contracts which it makes with the carriers should be subject to our jurisdiction. The investigation which we have made in this proceeding is essential to the determination of reasonable charges for a special service which by statute has been included in the transportation duties of respondents. Yet this investigation, so far as it involves the accounts and records of the express company, has been made as a matter of favor. Under the present law we have no access to the records of that company which we could have enforced as a matter of legal right. Plainly this is an indefensible situation which ought not to be permitted to continue.

One further word of comment upon the general situation seems desirable. We have found in this proceeding that respondents should be reimbursed for certain costs through the stated refrigeration charges and for certain other costs through freight rates. Cost analysis has not, however, yet developed to such an extent that it can be effectively applied in the regulation of the latter. It is a matter of doubt, therefore, whether after certain costs have been taken care of through stated refrigeration charges, the shippers are relieved, as they should be, from the burden of those costs so far as the freight rates are concerned; and it is equally a matter of doubt whether in those rates respondents receive sufficient compensation for the costs which the transportation service involves. It seems evident that sooner or later these doubtful matters must in some way receive analytical study.

The Railroads' Place in Industrial Development*

Mass transportation essential—Improved locomotive conditions a factor in increasing railroad efficiency

By A. G. Pack
Chief Inspector, Bureau of Locomotive Inspection,
Interstate Commerce Commission

THE railroads, notwithstanding their shortcomings of years ago, are and have been the greatest factor in the growth of our country and the advancement of civilization; without them there would have been great hardships, the development of the country would have been seriously retarded, with civilization in a state of decadence; in fact, the railroads are a public necessity which must not be seriously crippled nor permitted to go into decay. The insatiable call of mankind for new and better things could not be answered were it not for safe, efficient, dependable and rapid transportation for both persons and property. The railroads have given man greater power over nature; as a result of man's success in the conquest of nature his intelligence is developed, his leisure and wealth increased, and his wants for new and better things are multiplied.

It may be said that when poor and half-nourished, man's idea of Heaven is a place to rest from his daily toils and an abundance of substantial food. It is said that a poor farmer was once asked what he was working for, to which he replied: "Salt pork and sundown." If this poor farmer should inherit worldly wealth and come to the city to live, it would need no prophet to foretell what would happen to his taste for salt pork, or his thought that sundown was only a signal for going to bed.

Man's increase in wants, coincident with his increase in leisure and improvement in intelligence and financial condition seems to be a self-generating process. "The more he has the more he wants," is an old but true adage. Want or desire is the foundation stone of all activities, including commerce.

In the savage and unrefined state of man there was neither commerce nor government—no orderly procedure in anything. The length of this period can not be estimated. It must, however, have been of long duration since evolution under such circumstances would necessarily be slow. Violence was the rule; brutal force only was recognized in fulfilling man's desires.

Out of this chaotic state there emerged the communistic period. It was created to break the intolerable brute force of the bully who appropriated by sheer physical force and murdered at will. Under it some measure of personal safety was achieved; something approaching order was inaugurated by establishing rules that what should govern one should govern all. While community of interest afforded some personal protection within the precincts of the tribe, it extended no further. Warfare between rival communities or tribes was unceasing; it knew neither mercy nor distinction of age or sex; men met only to destroy one another. Wars and predatory raids were the means of acquiring property, including slaves.

Private ownership of property was, however, unknown but temporary rights were sometimes accorded persons who cleared a plot of ground. When the communities learned to maintain order, to restrict the vicious, and secure individual safety for the weak, the personality of man began to assert itself and men were no longer content to live in common. Each individual sought to add to his belongings by personal effort, by self-denial, by hoarding and finally by industrial and commercial ventures. Industries grew up, commerce received more or less impetus; treaties between neighboring peoples were made. Thus was commerce born and man encouraged to produce.

Mass Transportation the Foundation for Mass Production

The natural instinct in man is to better himself, an instinct that nothing can suppress. Commerce can not succeed or exist without means of transportation being provided, i.e. moving things from place to place where they may serve a desired purpose.

The ability to transport great quantities for vast distances, bringing hitherto inaccessible locations within comparatively easy reach of the centers of consumption, has resulted in expansion of agriculture, stock raising, mining, lumbering, etc., which in turn created a new demand for manufactured articles and for labor. It has made it possible for people in general to indulge their desires for better things, not only because they could be obtained at a lower cost and with less delay in distribution, but also because the greater industrial activities have increased their earning power to the point where they are able to purchase more freely than before.

Entirely new problems have been met and largely solved by manufacturers, distributors, and merchants. New manufacturing enterprises have been born, new practices have sprung up in the distribution of commodities; the ranks of the jobbers, wholesalers, and retail merchants have greatly expanded, and in direct proportion to the ability of the people to buy and consume, which could not have been accomplished were it not for safe, efficient, prompt and rapid transportation furnished by the railroads.

The ability to transport in quantity with the increase in industrial activities and the consequent reduction in costs of commodities have given the people the opportunity to demonstrate their ability for quantity absorption.

Mass production, as we understand the term today, and production possibilities with the ability of the people to buy and consume, will largely determine the growth of business. As transportation facilities improved and made it possible to exchange commodities profitably, a demand grew up for inventive genius to devise machines that could produce articles in quantity and at reduced cost, and for new articles that it was anticipated the

* Abstract of an address delivered before the New York Railroad Club, February 15, 1929.

public might absorb. New production machines and processes became such a big problem that reliance upon individual inventive genius gave way to experimental departments where engineers, chemists and other technical men collaborate in producing new articles and machines with the calm assurance of satisfactory results. Invention after invention has lowered the cost of production and made great increases in the output of commodities. It is said that one man with the aid of modern machinery can produce more in a day than his grandfather could have produced in a lifetime.

As man-hour production increased, we have often heard the prediction that the time was fast approaching when all the market could absorb could be produced by industrial workers laboring two or three hours a day. The increasing efficiency of machines seemed to some to be destined to reduce the demand for labor to a minimum and as a consequence, dire prophecies were heard with regard to the future of the laboring classes. These forebodings were based largely upon the assumption that man has a definite number of wants and that when these wants are satisfied he becomes content. As a matter of fact, a man is a bundle of an infinite number of potential wants, and continuance of our progress is now looked upon by many farsighted people merely as a matter of adequately rewarding labor so that increased buying power may obtain.

If we accept the latter viewpoint—and it seems to be correct—there is little likelihood of general over-production, although of course over-production may occur with respect to specific commodities and specific articles. The ultimate consumer is the power back of prosperity. The individual buyers control the situation. The effect of unceasing and unlimited demand for more and more is to increase the prosperity of the nation.

When people have all they want of one thing, demand turns to something else—for more and better things all the time. There is not a family in a four-room apartment in this city that would not like to have a six-room apartment, or one with six rooms that would not like to have more; and so on from apartments to dwellings, from dwellings to mansions, with all that go with them. There is no family without an automobile that would not like to have one, and most of the families having one would like to have another. Therefore, the ability to have depends upon production, and the opportunity for production depends upon the exercise of buying power. This is the cycle of our civilization and prosperity, neither of which could exist were it not for the safe, dependable, rapid and low-cost transportation furnished by the railroads.

A Step Forward in Transportation

A decided forward step has been created in our national prosperity during the past few years by the railroads. The first accomplishment of the railroads was to remove the barrier which distance imposed on commerce and this necessarily had to be done at the lowest practicable cost if the railroads were to prove their economic justification. The measure of freight train performance for many years was ton miles per trip, which is only another way of saying tons per train, the element of time not being given due consideration. This period in the history of the railroads may be likened to that period in the career of many merchants when the importance of increasing annual turn-over was either not well understood or was not given proper weight.

The importance of the time element has long since been recognized in passenger service, perhaps because of its spectacular features and the inborn impatience of human beings, but it is only within recent years that adequate consideration was given to intensive use of freight equipment, and the conservation of time in freight train service.

With the realization that ton-miles per train-hour was the true measure of freight-train performance and that inactive locomotives and cars were eating off their own heads, so to speak, a new day dawned for the transportation industry, the manufacturers, jobbers, wholesalers, retail merchants and the people in general.

Influences of General Progress on the Railroads

The railroads are not immune from the influences that brought about the retirement of the old time buggy, that changed livery stables into garages, that forced the harness maker into the business of making traveling bags, turned stove factories into radiator factories, and put the iceman practically out of business. Whatever the future may bring forth, however, we will need mass transportation and the master minds who have built up the railroad industry to the present high standards will be succeeded as time goes on by other master minds now in training, who will meet the problems of the future, whatever they may be, in the same skillful and thorough manner as those now at the helm are performing their duties today.

I say this in spite of the fact that other methods of transportation developed, partly developed, and in the making, are said by many to threaten profitable operation and the maintenance of the present standards of efficiency, because history has shown that no industry has more consistently developed giant mentalities than those developed by the hard and exacting school of railroading.

There are two groups who have in recent years suffered as result of the vast change in our transportation facilities and practices—the railroad employees and the railway supply manufacturers.

How Railroad Employees Have Been Affected

Changes that need not here be discussed in detail, principally brought about by the realization of railroad executives and operating officers that ton-miles per hour, coupled with tons per train and fully loaded equipment is a true measure of profitable operation, has resulted in the demotion and laying off of large numbers of employees, many of whom were eminently fitted for their highly specialized work and no other.

One of my friends, who is one of the leading executives of the railway labor organizations said with respect to loss of positions by railway employees: "We are firm believers in progress but we feel that we, as wage earners, least able to bear the cost, should not be penalized for progress."

History shows that members of various groups or occupations have always been called upon to bear an unequal share of the cost of progress, but this fact is not a valid reason for permitting continuance of the condition if a remedy can be found—and I believe it can.

More thought is being given and sincere effort being made in seeking a remedy for this condition than probably at any other time in the history of the world by leaders in industry, leaders of labor organizations and prominent economists.

Many prominent publicists, captains of industry and statesmen whose integrity and ability can not be questioned, are now expressing the view that labor shortage is better for industrial and social progress than labor surplus, which seems to hold out hope that ways and means will be found to alleviate, if not overcome, the distress so common to industrial evolution.

During the past few years our friends, the railway supply manufacturers have found themselves in a pre-

dicament somewhat similar to that of the carriers' employees, partly through the same cause and partly because the carriers find it profitable to reduce their inventories and confine their purchases to current needs. But they, like the employees, should not be unduly penalized for the progress made in transportation and manufacturing facilities, to which they have so largely contributed.

Organization, cooperation and coordination of interest in any undertaking where two or more people are involved, are the keynotes of success, and this is particularly true of large organizations employing great numbers of people. If any man or set of men are to accomplish the best results they must have the respect, confidence and esteem of those with whom they are associated, of those with whom they are required to deal, and of those whom they serve, be it the Government, the railroads or other institutions.

Vested power or authority should only be used when other methods or accomplishment have failed. Power is derived through government, organization and aggregations of wealth, all of which give man power over man, which may be wielded for good or evil, and I may predict that if this great government of ours, with our boasted wealth and culture, falls into decay, it will be because of unyielding powers—a battle between powerful influences.

Improvements in Locomotive Conditions

I have talked many times to associations of railroad men of the value of maintaining motive power in proper condition, insofar as it affected the safety of railway employees and the traveling public. There were no records prior to July 1, 1911, by which comparisons could be made of the number of accidents, and the persons killed and injured as a result of the failure of locomotive boilers and their appurtenances, therefore, any comparisons made must of necessity be confined to the fiscal year ended June 30, 1912 and subsequent years.

Comparing the fiscal year 1912 with 1928; there has been a reduction in the number of accidents due to the failure of some part or appurtenance of the boiler of 82 percent; in the number killed, 71 percent; in the numbered injured, 83 percent. Comparing the fiscal year ended June 30, 1923 with 1928, there has been a reduction of 69 per cent in the number of accidents; 58 percent in the number killed, and 70 percent in the number injured as a result of the failure of some part or appliance of the entire locomotive and tender, including the boiler, which unquestionably has been largely brought about by better inspection and maintenance and through more skillful operation, which has not only been of value in the conservation of human life and limb but has largely contributed to economical performance and improved transportation by the railroads.

The Relation of Locomotive Conditions to Improved Operation

I have prepared from public records, a tabulation which gives some idea of what has been accomplished, at least to a considerable extent, through better maintenance and improved condition of motive power. There are no records with which I am familiar by which comparisons can be made prior to the last six months of the fiscal year of 1920, therefore, any comparisons must be made with that and subsequent years.

It will be noticed from this tabulation that from 1920 to 1928 inclusive, the average miles per hour of trains in freight service has increased from 10.6 to 12.6, or approximately 19 percent. The number of pounds of coal consumed from 1921 to 1928 per thousand gross-ton miles, including locomotive and tender, has decreased from 167 to 129, or approximately 23 percent. The number of pounds of coal consumed per passenger-train car-mile has decreased from 19.5 to 15.2, or approximately 22 percent.

It will be further noted from the tabulation that the increased miles per hour of trains in freight service, the decrease in pounds of coal per thousand gross-ton miles, and pounds per passenger-train car-mile very closely follow the trend of the number of the locomotives inspected which were found defective and the number ordered out of service by Federal Inspectors, throughout this period.

Improvements in the Condition and Performance of Motive Power

Fiscal year ended June 30	Ave. miles per hour, trains in freight service	Lb. of coal per 1000 gross ton-miles including loco. and tender	Lb. of coal per passenger-train car-mile	Per cent of locos. inspected found defective	No. of locos. ordered out of service
1920	10.6*	...	19.5*	53*	{3774 / 1662*
1921	10.8	167*	18.2	50	3914
1922	11.8	159	17.5	48	3089
1923	10.6	167	18.5	65	7075
1924	11.3	154	17.3	53	5764
1925	11.7	143	16.4	46	3637
1926	11.9	139	16.0	40	3281
1927	12.0	133	15.6	31	2539
1928	12.6	129	15.2	24	1725

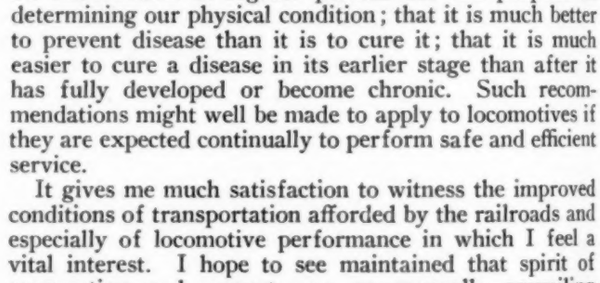
* Includes last six months only (January to June inclusive).

You know, the doctors tell us that we ought to undergo an examination at regular periods for the purpose of determining our physical condition; that it is much better to prevent disease than it is to cure it; that it is much easier to cure a disease in its earlier stage than after it has fully developed or become chronic. Such recommendations might well be made to apply to locomotives if they are expected continually to perform safe and efficient service.

It gives me much satisfaction to witness the improved conditions of transportation afforded by the railroads and especially of locomotive performance in which I feel a vital interest. I hope to see maintained that spirit of cooperation and respect now so generally prevailing throughout the United States, between the Bureau of Locomotive Inspection, of which I have the honor of being chief, the railway officials, railway employees, railway supply manufacturers and their representatives.

While I speak in conciliatory terms and endeavor to act with good judgment and discretion, I do not hesitate to say that I will invoke the punitive measures provided in the law for its enforcement, wherever and whenever, in my opinion, the conditions seem to warrant, and to the extent which seems necessary.

* * *



On the Canadian National Near Turo, N. S.

John J. Pelley Elected President of New Haven

Successor to the late Edward J. Pearson has been president of Central of Georgia since September, 1926

JOHN J. PELLEY, president of the Central of Georgia since September 15, 1926, has been elected president of the New York, New Haven & Hartford to succeed the late Edward J. Pearson. The presidency of the New Haven has been vacant since Mr. Pearson's death on December 7. In the meantime, however, Edward G. Buckland, vice-president in charge of law, finance and corporate relations, was, on January 3, elected chairman of the board of directors with authority to exercise the powers and perform the duties of president until such time as a new president was chosen. Likewise, on January 22, Arthur P. Russell, vice-president in charge of public relations, real estate, industrial development, valuation and insurance, and president of the New England Transportation Company, the New Haven's motor coach operating subsidiary, was promoted to executive vice-president.

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John J. Pelley

Mr. Pelley was born at Anna, Ill., on May 1, 1878. After graduating from the Anna high school he attended the University of Illinois, where he was engaged in special work. He began his railway service as a station clerk for the Illinois Central at Anna in 1899 and continued with that road continuously for more than 20 years. He was a clerk at Carbondale, Ill., from 1900 to 1901 and in 1902 became track apprentice and assistant foreman of an extra track gang. He was appointed foreman and general foreman in 1903 and became supervisor of the Peoria district in 1904. In 1905 Mr. Pelley was transferred to the Memphis district and was assistant yardmaster at Clarksdale on the Memphis division during 1906 and 1907. His promotion to roadmaster came in 1908 when he was located at McComb, Miss., where he remained until 1910 when he went to New Orleans. In 1911 he was at Fulton, Ky., in the same capacity and while there was appointed superintendent, which position he held until 1915, when he was transferred to Memphis in the same capacity.

In 1917 he was further promoted and became general superintendent of the southern lines of the Illinois Central, with headquarters at New Orleans, and in 1919, was transferred to the general superintendency of the northern lines.

Mr. Pelley withdrew temporarily from the service of the Illinois Central in 1920 to engage in work for the Car Service division of the American Railway Association at Chicago. In this connection he was appointed chairman of the Chicago Car Service Committee and manager of the Refrigerator Car Section of the Car Service Division, in which capacity he served until April 1, 1923. On this latter date he returned to the service of the Illinois Central as general manager, a position which he held until November, 1924, when he became vice-president in charge of operation.

It was from this vice-presidency that Mr. Pelley went in September, 1926, to the presidency of the Central of Georgia, which is the Illinois Central's largest subsidiary. His promotion came in connection with the official changes on the Illinois Central which transferred Charles H. Markham from the presidency to the chairmanship of the board of directors and promoted Lawrence A. Downs from the Presidency of the Central of Georgia to the presidency of the Illinois Central.

Thus Mr. Pelley within seven years, rose from the position of division superintendent to that of vice-president of the Illinois Central despite the fact that there were three intervening years in which he was out of the service of the system. In another two years he became the chief executive of his road's most important subsidiary and he now succeeds to the presidency of one of the most important railway properties in the east.

In discussing his election to the presidency of the Central of Georgia, the *Railway Age*, in the issue of September 18, 1926, said "A strong physical constitution as well as a strong mind are needed by the operating executive of a great railroad under modern conditions, and Mr. Pelley possesses both in a very high degree. He has long been recognized as a 'comer' not only because of his ability and inexhaustible energy but because he possesses the kind of personality that attracts both railway employees and patrons—and experience has shown that personality which begets friendliness is, under contemporary railway conditions, an almost indispensable asset of a successful railway executive."

During the time in which he has been president of the Central of Georgia, Mr. Pelley has encountered a difficult problem in shrinking traffic and revenues. By effective managerial control Mr. Pelley was able to re-

duce expenses so as largely to offset these losses. These declines have been drastic in the case of passenger traffic. As he became the chief executive in September, 1926, the year 1927 was the first complete fiscal period for the road under his direction. During 1927 gross revenues of the Central of Georgia declined from a 1926 figure of $31,825,369 to $27,641,310, a decrease of $4,184,059 or 13.15 per cent. Of this total the loss of freight revenue amounted to $2,320,657, or 10.06 per cent, whereas passenger business fell off 25.13 per cent from the previous year, or from a 1926 gross revenue of $5,907,478 to a corresponding 1927 figure of $4,422,-904. These decreases, according to the annual report, were due mainly to the loss of through traffic occasioned by the collapse of the Florida boom, and to increased highway competition. The declines continued in 1928 when freight revenues were $1,746,136 under 1927 and passenger revenues down another $693,827.

To meet the situation insofar as highway competition was concerned the Central of Georgia Transport Company was organized as a subsidiary early in 1928 and commenced the operation of motor coaches in substitution for train service. On the New Haven Mr. Pelley will encounter a wide field for the application of this experience with co-ordinated train and motor coach operations, since the New England Transportation Company, highway subsidiary of the New Haven, conducts the most extensive motor coach serivces under railway control in the United States at the present time.

The Lurry Tank-Car Cleaner

THE Lurry tank car cleaner, which has been placed on the market by the Wallace Engineering Corporation, Pere Marquette building, New Orleans, La., is a duplex mixing and spraying device which quickly denatures and dissolves semi-oxidized or dried coatings from the interior of tanks by injecting a balanced mixture of steam, induced air and a proper solvent, which provides maximum penetration and scrubbing effect on all portions of the interior surface to be cleaned.

The equipment is designed in three sections; namely, the cleaner proper, the hopper and the interchangeable dome cover. The only graduations in the cleaner control are the two threaded needle valves which control the visible fluid supply and provide for a range of solvent flow from a slow drip to a ⅜-in. stream. The steam nozzle allows a ¾-in. flow. The air is supplied through nozzles which graduate the ratio of air to steam and is drawn into the steam by induction in amount sufficient to create a proper interior circulation. The automatic air control is the basic feature of the device.

The hopper is a simple open container of sufficient size for the admission of solvent and water. It is fitted into the head of the cleaner, from which it is detachable.

The interchangeable dome cover is designed to fit dome openings of from 14½ in. to 17 in. It is provided with thumb clamps which fasten it firmly to the top of the dome. A sliding collar is fitted around the tubes of the cleaner. When the cleaner is inserted, the collar fits over the opening in the dome cover. Set screws are provided to hold the cleaner in any desired position throughout its length. A vent pipe is provided in the dome cover.

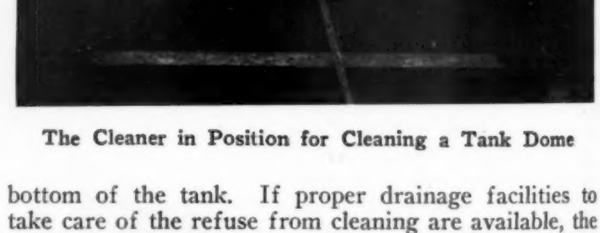
In operation, steam enters a 1-in. pipe connection at the side of the head of the cleaner. The steam passes down through one pair of tubes to the bottom of the cleaner and is discharged at outlets surrounding the nozzles. The fluid content of the hopper flows by gravity through the two needle valves into open cups where it mixes with the induced air and passes down through another pair of tubes to combine through the inner nozzles at the base with steam at the point of discharge.

The refuse is drained through the outlet valve in the bottom of the tank. If proper drainage facilities to take care of the refuse from cleaning are available, the car can be placed on the repair track for cleaning without inconvenience to the workmen. The cleaning time is determined by the character of material the tank has held, by the condition of the coating and the amount of sediment in the tank. A maximum of 1½ hours is said to be sufficient for the worst conditions found in fuel oil tanks. The cleaning time diminishes down to 20 or 30 minutes in the case of vegetable oil tanks in fair condition.

The Cleaner in Position for Cleaning a Tank Dome

The cleaner weighs about 25 lb. and no special equipment is needed other than the regular steam and water lines.

* * *



Heavy 4-8-2 Type Locomotive on the Central Vermont

Clift Succeeds Pelley on Central of Georgia

Operating vice-president of Illinois Central has had 41 years of service on that railroad

ALBERT E. CLIFT, senior vice-president of the Illinois Central, has been elected president of the Central of Georgia, a subsidiary of the Illinois Central, to succeed J. J. Pelley, who has resigned to become president of the New York, New Haven & Hartford. Mr. Clift is the third officer of the Illinois Central to become president of the Central of Georgia in recent years, his predecessors being Lawrence A. Downs and Mr. Pelley. Mr. Downs, who was elected president of the Central of Georgia in 1920, after serving as vice-president and general manager of that road, came to that position from assistant general manager of the Illinois Central on March 1, 1920. Mr. Pelley was elected president of the Central of Georgia on September 15, 1926, being promoted from vice-president in charge of operation of the Illinois Central.

In Service 41 Years

Mr. Clift's entire railway experience, covering 41 years, has been with the Illinois Central and he comes to the Central of Georgia with a wide experience in the operation of railroads. He possesses a strong physical constitution and a strong mind, both essential for an operating executive. While he is a very exacting man, his associates enjoy working with him, this trait in his personality prompting those who work under him to give their best. In addition to his connection with the Illinois Central, he has been, since 1926, president of the Chicago & Illinois Western, a subsidiary, and chairman of the board of the Peoria & Pekin Union. He is also a member of the executive committee and of the board of directors of the Belt Railway of Chicago and a member of the board of the Terminal Railroad Association of St. Louis.

Albert E. Clift

Began as Call Boy

Mr. Clift was born, October 15, 1869, at Urbana, Ill. He entered railway service as a call boy on the Illinois Central at Champaign, Ill., and on December 5, 1888, became a freight brakeman for the same company. He was promoted to conductor on April 8, 1892. He was appointed engine foreman of the Champaign district of the Illinois Central on February 19, 1893, and held this position for less than a month when he was promoted to yardmaster. He became a conductor on the Chicago district in December, 1894, and a passenger conductor on the same district in August, 1901. He was promoted to acting trainmaster of the Chicago district, with headquarters at Kankakee, Ill., on October 14, 1902, which position he held until February 3, 1903, when he was promoted to trainmaster. He was promoted to superintendent of the Freeport division, with headquarters at Freeport, Ill., on February 22, 1905, and served in this capacity until January 15, 1907, when he was transferred to the St. Louis division, with headquarters at Carbondale, Ill. He was promoted to general superintendent of the Southern lines, with headquarters at New Orleans, La., on June 1, 1910, which position he held until May 10, 1912, when he was transferred to the Northern and Western lines, with headquarters at Chicago. On August 1, 1917, he was promoted to general manager, with headquarters at Chicago and in March, 1923, was promoted to vice-president in charge of operation.

Mr. Clift has taken an active interest in association work, being a member of the American Railway Engineering Association and a member of a special committee of the operating division of the American Railway Association. In 1926 he served as vice-president of the Traffic Club of Chicago and in 1927 as president. During the latter year the club experienced a remarkable development; in the following year he was elected a director. He is also a director of the Western Railway Club.

THE PUBLIC SERVICE COMMISSION OF NEW YORK held a hearing at Albany on February 18, in connection with its announced intention to make a general investigation of freight rates, and 100 representatives of shippers, chambers of commerce, railroads, etc., were present. A motion was made in behalf of the railroads to suspend the inquiry until a decision shall have been announced by the Interstate Commerce Commission in its similar investigation covering inter-state rates, but no action was taken on the motion. It was agreed that committees representing the carriers and others representing the shippers confer to decide what facts ought to be presented if hearings continued.

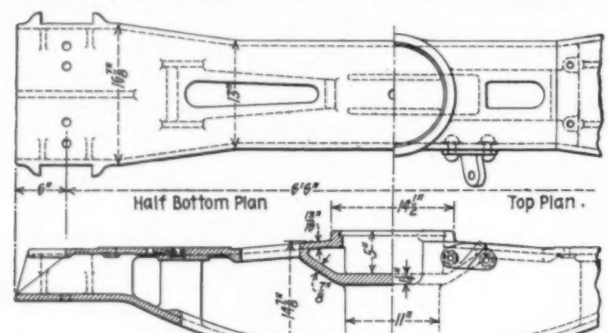
Lubricated Car Center Bearings

IN the June 28, 1928, issue of the Daily Railway Age, on page 1490D121, appeared an article describing a lubricated center bearing bolster which has been developed by the Pittsburgh Steel Foundry Corporation, Glassport, Pa. The bolster described in this article was designed for use with a center plate which serves as a reservoir for the oil, holes through the top center plate side and bottom walls permitting the oil to pass through into the center bearing recess of the bolster.

Intended for General Use

This method of lubrication is intended for general use on all types of cars except those which are unloaded in car-dumping machines. In such cases, other provisions for storing the lubricant are necessary in order that it may not be lost when the cars are dumped.

The drawing shows the modification in the bolster structure which has been made by the Pittsburgh Steel



Lubricated Center—Bearing Bolster with Oil Pockets in the Bolster

Foundry Corporation to provide space for an oil reservoir in the bolster itself rather than in the center plate. Oil pockets are cored in the bolster at either side of, and opening into the center bearing recess, and the center plate is cast solid. A sufficient amount of lubricant is placed in the center bearing recess before the body center plate is dropped into place, and with the wool-felt dust and oil guard in its groove, this lubricant is sealed in place, irrespective of the position of the car.

Center Bearing Recess

It will be seen on the drawing that the center bearing recess in the bolster has a depth of 5 in. and that with the center plate in the bearing, there is ⅛ in. clearance between the under surface of the flange and the top of the bolster. The dimensions also show that the wool-felt dust and oil guard, when in its recess in the bolster, projects ¼ in. above the top of the bolster. It is thus under ⅛ in. compression when the center plate is in place.

Two cars equipped with the lubricated center bearing type of bolster were placed in service in the Pittsburgh district in May, 1927. Early in April, 1928, these cars were inspected to determine the condition of the center plates and center bearing recesses in the bolsters. The center plates showed no evidence of wear beyond the brightening of the skin surface on a small area at the corners of the center plate bearings on the transverse center line of the body bolster. There was no external evidence that any of the oil had been lost. The felt oil-retaining and dust ring was still in place and functioning effectively.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended February 9 amounted to 955,478 cars, an increase of 49,001 cars as compared with the total in the corresponding week of last year, and a decrease of 7,124 cars as compared with the corresponding week of 1927. Coal loading totaled 217,832 cars, an increase of 48,836 cars as compared with a year ago. Loading of coke, ore, grain and miscellaneous freight also was heavier than last year. Livestock, forest products and less-than-carload freight showed decreases. District totals, except in the Northwest, were larger than a year ago. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week ended Saturday, February 9, 1929

Districts	1929	1928	1927
Eastern	228,421	207,214	219,418
Allegheny	194,330	181,344	198,607
Pocahontas	61,271	51,480	60,326
Southern	147,893	144,370	159,348
Northwestern	112,392	117,905	113,548
Central Western	135,261	130,797	137,006
Southwestern	75,910	73,367	74,349
Total Western Districts	323,563	322,069	324,903
Total All Roads	955,478	906,477	962,602
Commodities			
Grain and Grain Products	47,860	46,190	41,342
Live Stock	27,530	32,844	28,027
Coal	217,832	168,946	218,486
Coke	15,821	12,736	12,399
Forest Products	59,812	68,315	70,968
Ore	9,337	8,512	11,104
Merchandise L. C. L.	248,688	250,336	252,970
Miscellaneous	328,598	318,598	327,306
February 9	955,478	906,477	962,602
February 2	946,892	926,262	965,664
January 26	926,188	902,664	943,879
January 19	931,880	884,683	936,160
January 12	914,187	907,301	942,731
Cumulative total, 6 weeks	5,473,348	5,281,634	5,685,926

The freight car surplus during the period ended February 7 averaged 245,907 cars, as compared with 278,213 cars on January 31. The total included 115,945 box cars, 83,968 coal cars, 23,598 stock cars and 10,558 refrigerator cars.

Car Loading in Canada

Revenue car loadings at stations in Canada for the week ended February 9 totalled 64,045 cars, an increase over the previous week of 2,437 cars, and a decrease of 4,825 cars from the same week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Totals for Canada		
February 9, 1929	64,045	46,409
February 2, 1929	60,878	41,437
January 26, 1929	59,415	41,420
February 11, 1928	65,717	42,050
Cumulative Totals for Canada		
February 9, 1929	345,792	236,140
February 11, 1928	374,093	221,513
February 12, 1927	354,655	216,574

The Express Plan Is Approved

Necessary authority granted by I. C. C. for taking over by railroads of express business

WASHINGTON, D. C.

THE Interstate Commerce Commission has given its approval, to the extent required, of the plan of the railroads for taking over the business of the American Railway Express Company on March 1. Authority was granted the Railway Express Agency, Incorporated, to issue 1,000 shares of capital stock without nominal or par value and $32,000,000 of 5 per cent serial gold bonds, series A, to be sold at not less than $100 a share for the stock and 97¾ per cent of par and accrued interest for the bonds, and the proceeds used to pay for the properties to be acquired from the American Railway Express Company and for working capital. Acquisition of control of the Express Agency, jointly by the 86 participating railroads which execute the agreement with agents, dated July 2, 1928, by purchase of capital stock, also was approved and authorized, as was article V of the proposed operating agreement, in so far as it provides for a division of earnings among carriers in specified groups.

William B. Storey, Wallace W. Atterbury, Patrick E. Crowley, and Carl R. Gray, agents appointed by agreements executed as of July 2, 1928, have notified the express company that the participating railroads will not renew the amended contracts upon their expiration or enter into negotiations for any new contracts with it for the operation of express transportation business and the express company will discontinue express operations over the lines after midnight February 28, 1929, under Substituted Article XX of the amended contracts.

Knowing that the contracts with the express company would expire on February 28, 1929, and that some definite action would have to be taken then for conducting the express business, the Uniform Express Contract Committee of the Association of Railway Executives appointed a legal committee to prepare an agreement for the purchase of the stock of the express company, or the formation of a new express company. The legal committee submitted its report and plan, dated June 21, 1928, for the future conduct of the express business.

The 86 railroads comprising substantially all the members of the Association of Railway Executives, are represented as doing nearly 98 per cent of the gross express business under the amended contracts, although it was testified that over 300 short line railroads are parties to such contracts. The number of shares of stock of the Express Agency allotted to each railroad determined by the ratio that the express business handled on each company's line, measured by receipts, bore to the gross business handled by all the participating railroads, using as a basis for such computations the average for 1923 to 1926, inclusive.

The by-laws of the Express Agency provide for a board of 15 directors, of which 14 are to be nominated by districts. For that purpose the continental United States has been divided into the Eastern, Southern, and Western districts. Six directors are to be nominated by members of the Eastern district, three by members of the Southern district, and five by members of the Western district. Each railroad owning shares of stock of the Express Agency is deemed to be a member of the district in which its line of railroad is located, or, if located in more than one district, of the district in which the greater portion of its single-track mileage is located.

Terms of Purchase

Under date of January 23, 1929, the express company and the agents entered into an agreement which provides that the express company shall sell and the agents purchase properties owned by the express company as of February 28, 1929, consisting of equipment, buildings, whether on land owned or not owned by the express company, the parcels of land listed in a memorandum annexed to the agreement, and all material and supplies. The material and supplies are to be acquired at their book value, the equipment and buildings at their book value, less depreciation, and the parcels of land at an agreed amount of $8,270,000, which was determined after both parties had appraisals made and found that the separate appraisals were nearly in agreement. The purchase price for all the properties was fixed at $30,313,000, subject to any adjustments that may be necessary because of changes that may occur up to the time the actual transfer takes place. No adjustment, however, is to be made in the agreed price for the land.

The terms and conditions covering the transfer of the properties are contained in the agreement with the express company and provide, among other things, that the latter will surrender to the agents control of all offices and operating and office organizations, operating records and accounts, the agents reserving the right to take into service or to dismiss from service thereafter any officers or employees of the Express Company. The agents will liquidate and settle the accounts of the express company outstanding on February 28, 1929, arising from the conduct of the express company's business during the Uniform Express Contract and the Amended Uniform Express Contract periods, assuming and paying all liabilities whether recorded or unrecorded, and defending or settling all claims, demands, and suits growing out of such business.

For the purposes above stated the express company will transfer to the agents all contract assets and contract asset accounts existing on February 28, 1929. The agents will assume all obligations of the express company under its employees' pension system to continue all pensions heretofore granted, or which may be granted prior to March 1, 1929, and to recognize the pension rights under that system, of all officers or employees of the express company taken into the service of the agents. The agreement contemplates the transfer of the properties as of midnight on February 28, 1929, but provision is made for extending the time to later dates to and including June 1, 1929. The agents will assign their interests in this agreement to the Express Agency.

Uniform operating agreements are to be executed between the Express Agency and each participating railroad that executed the agreement of July 2, 1928, with the agents, and indentical agreements are to be

executed with such other railroads as heretofore have executed the amended contracts and will grant the Express Agency permission to conduct the express business on their lines. The agreement is to cover a period of 25 years beginning March 1, 1929, and continuing until midnight on February 28, 1954. Under its terms each railroad will appoint the Express Agency as the exclusive agent for conducting and transacting all the express transportation business on its line. The agreements set forth the terms and conditions to govern the conduct of the express business, the equipment and facilities to be furnished, the rentals payable by either party for use of property of the other, arrangements for joint employees and liability as between the parties for damages, injuries, etc.

Under section 3 of Article II of this agreement the Express Agency may engage by means of motor truck, air craft, or other instrumentality than railroad trains, in the transportation of property which would otherwise be transported on trains of the railroad executing the agreement, but only with the consent of that company and of other carriers executing like agreements which would participate in such transportation if conducted by railroad. Under section 2 of the article stated the railroad reserves the right to transport any property independently of the agreement by means of motor truck, air craft, or other instrumentality than railroad trains, and to perform in connection therewith the auxiliary service known as pick-up and delivery.

Provision is made in Article V as to the procedure to be followed in determining the earnings available for payment to the Participating Roads. To insure and to preserve a proper and equitable proportion of all competitive business to the companies executing the operating agreement with the Express Agency, the latter agrees to divide the competitive traffic upon a fair and equitable basis between the carriers, giving due consideration to the distribution of competitive traffic handled by the carriers during the three years ended December 31, 1928, and to the elements of service, direct routing, car supply, and terminal facilities.

Participation of Short Lines

While the plan contemplates that the ownership of the Express Agency's capital stock and the control of that company will be limited to those railroads which execute the agreement with agents, the privilege of participating in the operating agreements will not be confined to such railroads, but will be extended to all short-line railroads now parties to the uniform express contracts and the amended uniform express contracts. That privilege will enable the short-line railroads to share in any benefits to be derived from the conduct of the express business by a railroad controlled agency upon the same terms and conditions as the Participating Railroads. The difference in the status of the short-line railroads and of the trunk lines in respect to the Express Agency is that the latter will exercise control over the Express Agency through ownership of its stock. However, it is stated that the holding of stock of the Express Agency would confer little, if any, advantage to the short lines as they handle only about 2 per cent of the gross express business conducted under the amended contracts, and the amount of stock that would have been issuable to the respective short-line railroads under the method of allotment followed would have been so small a fraction of a share for each company as to make the adoption of such a plan impracticable and the holding of stock of practically no consequence.

Another benefit to the short-line railroads is that although under the terms of substituted Article XX of the amended contracts each of them is obligated to purchase at the termination of the contract on February 28, 1929, the property of the Express Company located on its line, it will be relieved from using its cash or credit for that purpose, as the method of financing the purchase of the Express Company's properties by the Express Agency provides that the latter will obtain the necessary funds by the issue of its 5 per cent serial gold bonds.

The agents have forwarded to the short-line railroad companies two copies of the proposed form of operating agreement to be executed by the several companies. At the same time there was also transmitted for execution an assignment of those companies' rights under substituted Article XX of the amended contracts, whereby the short-line railroad executing the assignment would assign to the agents its rights under the article mentioned and would assign to the agents all its right, title, and interest in and to all property of the Express Company located on its lines. In consideration for such assignment, the agents agree to assume the obligation of the railroad under Article XX to purchase the property of the Express Company located on the line.

The testimony was that of the 86 railroads in all but five at the date of the hearing had approved the plan and four of those were in the process of approving it.

Financing the Project

The Express Agency proposes to file prior to February 28, 1929, with the commission and with each state commission or elsewhere as may be required, its adoption, as its tariffs effective March 1, 1929, of the then existing tariffs of the Express Company.

The general balance sheet of the Express Company as of November 30, 1928, according to the report, shows real property and equipment $46,572,610, other investments $7,235,522, current assets $34,405,896, deferred assets $183,095, unadjusted debits $1,475,616, capital stock $34,642,000, current liabilities $24,796,676, deferred liabilities $1,700,558, unadjusted credits $25,350,847, including $20,494,949 accrued depreciation on buildings and equipment, and corporate surplus $3,382,659. From the balance sheet of the express company as of September, 1928, it appears that the depreciated book value of buildings and equipment was $20,882,819, and that the amount of material and supplies was $1,461,298. These amounts added to the agreed price of $8,270,000 for land, makes a total of $30,614,117, or an amount in excess of the purchase price of $30,313,000. However, the agreement provides for the adjustment of the purchase price to the actual figures as at the closing date, and thus any changes occuring in the accounts because of additions, retirals and accrued depreciation will be taken care of in the final statement.

To procure the funds with which to purchase the properties of the Express Company and to provide working capital in addition to that which will be provided by the issue of capital stock, the Express Agency proposes to issue $32,000,000 of 5 per cent serial gold bonds, series A, the application for authority to issue $35,000,000 of bonds having been amended at the hearing.

Serial Gold Bond Issue

The Express Agency proposes to make, under date of March 1, 1929, an indenture to the Guaranty Trust Company of New York, as trustee, providing for a total issue of $50,000,000 of serial gold bonds which

will not be secured by a lien on physical property, but by an assignment to the trustee of the Express Agency's rights under the operating agreements. Under article four of the proposed indenture the Express Agency will covenant that so long as any of the serial gold bonds are outstanding it will not create any mortgage or encumbrance on its physical properties unless the bonds then outstanding are secured by a lien on the property so mortgaged prior to the lien of the mortgage so created; and that so long as any of the bonds are outstanding it will, before making any payments to the Participating Railroads of any sums due to them under the operating agreements set aside out of the net recepits for each six months' period ended June 30 and December 31, as a sinking fund, an amount equal to the principal amount of bonds which are due and payable in such six months' period.

The bonds proposed to be issued presently have been designated series A. They will be dated March 1, 1929, will be issued as coupon bonds registrable as to principal in the denomination of $1,000, will be redeemable at the Express Agency's option as a whole on March 1, 1939, or on any interest date thereafter at their principal amount and accrued interest plus a premium for each serial maturity of one-fourth of 1 per cent for each six months between the date of redemption and the date of maturity, will bear interest at the rate of 5 per cent per annum, payable semiannually on March 1 and September 1 in each year, and will mature in 40 semi-annual installments of $800,000 each, beginning September 1, 1929, and ending March 1, 1949.

Financial Outlook

The commission in its report says:

It appears that the gross charges of the Express Company for transportation for the years 1925, 1926, 1927, and for the first 11 months of 1928, were $290,303,042, $294,519,014, $284,512,701, and $255,726,926, respectively. On the basis of express operations of the Express Company for 1925 to 1928, inclusive, the net receipts of that company for those years which, under the proposed operating agreements, would have been available, after deducting all operating expenses, for interest on and principal of the proposed series-A bonds, are respectively as follows: $138,632,841, $142,569,117, $134,511,013, and $135,600,000. The last amount includes partially estimated figures for four months. The interest and principal installment requirements for the first year will amount to $3,180,000, which requirements decrease each year as the maturing installments are paid.

From these comparisons it appears that it may reasonably be expected that the Express Agency will earn many times over the yearly interest and principal requirements of the bonds, and will have substantial earnings for distribution to the railroads entitled thereto. It should also be observed that at the end of 20 years the proposed $32,000,000 of bonds will have been retired, leaving the Express Agency without any funded debt; unless during that period it should issue, after having obtained our authorization to do so, all or a part of the remaining $18,000,000 of bonds that may be issued under the proposed indenture.

Arrangements have been made, subject to our approval to sell the series-A bonds to J. P. Morgan & Company and Kuhn, Loeb & Company at 97¾ and accrued interest. On that basis the average annual cost to the Express Agency will be approximately 5.307 per cent.

The agents also asked for our approval, under and to the extent required by paragraph (1) of section 5 of the interstate commerce act, of the form of the proposed operating agreement which is to be executed by the Participating Railroads and by other short-line railroads that become parties thereto. The particular portion of the operating agreement to which our jurisdiction extends and which requires our approval under paragraph (1) of section 5 is the pooling of earnings arrangement embodied in Article V. In its material terms the pooling arrangement in Article V of the proposed operating agreement is substantially the same as in that article of the uniform express contracts, any differences being due to the fact that as now constituted the Express Company is privately owned and operated for profit, while the Express Agency will be controlled by the Participating Railroads, and the earnings remaining after accounting for all items of income and deductions therefrom will be designated "rail transportation revenue" and paid to the carriers within specified groups that are entitled to receive it. In arriving at the amount of such revenue, provision is made under item (j) of section 4 of this article for deducting certain profit and loss debit items therein enumerated, including surplus applied to sinking funds or set aside for investment in physical property. The effect of this will be to reduce the operating revenues of the railroad carriers which they derive from express traffic by amounts which are in reality appropriations of surplus. It should be understood that all that we are here passing upon is the plan for pooling and dividing earnings and we are not passing upon other provisions of the contract, such as that mentioned above. Nothing herein contained is to be construed as an expression of opinion upon the propriety of such deductions in connection with the determination of recapturable income under section 15a of the interstate commerce act.

Commissioner Eastman, in a concurring opinion said that while he regards the use of stock without par value as generally objectionable, the matter is of inconsequential importance here.

He took occasion to point out, however, that in the regulation of express rates for the future it will be necessary, if the commission is to do more than guess at reasonable rates, to know the cost of the service which the railroads perform in connection with the express business. This will have to be done either by sporadic cost studies or by a revision of railroad accounting so that this cost will currently be segregated from other railroad costs instead of being mixed inextricably with them, he said.

Organization of New Company

With the transfer of operations from the American Express Company to the Railway Express Agency, Incorporated, on March 1, there will be little change in the personnel of the executive staff of the operating company. At a recent meeting of the directors of the new company, the chief executives of the old company were elected to corresponding positions in the new company. The some 70,000 employes of the American Express Company will be retained in their present positions under the new operators.

In accordance with this plan, the directors elected Robert E. M. Cowie, president of the American Railway Express, to the office of president of the Railway Express Agency, Incorporated.

Following the election of Mr. Cowie, the appointment of the following officers was announced:

W. A. Benson, executive vice-president; E. R. Merry, Jr., secretary; Charles A. Lutz, vice-president, general accounting department; W. B. Clark, vice-president and treasurer; L. R. Gwyn, vice-president, department of personnel; George S. Lee, vice-president, traffic department; H. S. Marx, vice-president and general counsel; J. H. Butler, general manager, public relations department; and E. E. Bush, manager, department of maintenance and purchases, all with offices in New York.

C. W. Robie, vice-president, operating departments, eastern territory, New York; E. A. Stedman, vice-president, operating departments, central territory, Chicago; C. D. Summy, vice-president, operating departments, south western territory, St. Louis, Mo.; William G. Smith, vice-president, southern territory, Atlanta, Ga.; L. O. Head, vice-president, operating departments, western territory, San Francisco, Cal.

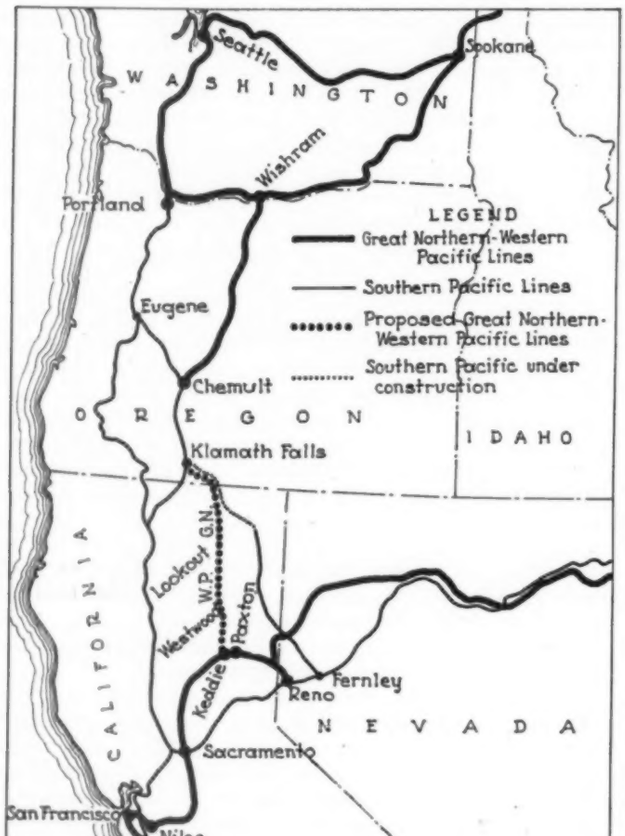
In addition to the foregoing, Marcus L. Bell and F. C. Nicodemus, Jr., were appointed vice-presidents, and Henry W. Clark, assistant secretary, representing the proprietary railroads, for the purpose of completing the remaining details of the express plan and transfer from the old to the new companies. These positions are only temporary, however, pending the final consummation of the transaction.

Great Northern Proposes Line Into California

WASHINGTON, D. C.

EXTENSION of the lines of the Great Northern from Klamath Falls, Ore., into California to connect with a northerly expansion of the Western Pacific from Paxton or Keddie, Calif., is proposed in applications filed with the Interstate Commerce Commission on February 14 by the two railroads. The Great Northern proposes to build about 80 miles south to Lookout, Modoc county, Calif., while the Western Pacific proposes to build about 120 miles north.

According to the applications this construction would furnish physical connection and additional through routes and competitive movement between points on the Great Northern and its connections and points on the



How the Proposed Connection Will Open a New Route Between the Pacific Northwest and San Francisco

Western Pacific and its connections, and whenever this traffic moves through Central or Western Oregon to or from points east of the Cascade mountains it will permit the movement of such traffic under joint through rates via a route lying entirely east of the Cascades, avoiding the longer route west of the mountains.

Three important trade arteries would thus be created:

(1) A second rail link between San Francisco and Portland, affording the Pacific coast states competitive rail facilities for the entire distance between the Canadian and Mexican boundaries.

(2) A direct rail link between San Francisco, Spokane and the inland northern tier of states 120 miles shorter between Sacramento and Spokane than existing routes.

(3) A third and more direct rail connection between the Pacific Northwest and the states in the lower Mississippi valley.

The route to be connected up by the two railways follows the Feather river canyon through the Sierra Nevada mountains on a water level grade and swings northward along the plateaus and rivers lying just east of the Sierra Nevadas and Cascades to the Columbian river basin.

These applications follow a great deal of activity on the part of the Western Pacific in extending its facilities in California by the acquisition of short connecting lines, and an application for authority to build about 170 miles of additional line is now pending before the commission.

Arthur Curtiss James, chairman of the board of the Western Pacific, is said to be the largest individual stockholder in the Great Northern and Northern Pacific. The Western Pacific, with the Missouri Pacific, jointly controls the Denver & Rio Grande.

A California outlet for the Great Northern is said to have been the objective of James J. Hill, when he began an extension south from the Columbia river in 1909. This line up the Deschutes river just east of the Cascade range was built as far as Bend, in central Oregon, when railway conditions became unsettled and further construction was deferred. The project was revived by joint action of the Great Northern and Northern Pacific in 1925, when permission was asked of the Interstate Commerce Commission to extend the line from Bend to Klamath Falls, about 20 miles from the Oregon-California boundary.

The Northern lines' proposal was vigorously resisted by the Southern Pacific. The Commission approved the principal of competitive rail development, but insisted that unnecessary duplication of existing rail facilities be avoided and imposed a condition that the Northern lines and the Southern Pacific effect an agreement for the joint use of about 75 miles of existing line. Negotiations failed and the commission removed some of its requirement as to a joint trackage agreement. At this juncture, the Northern Pacific withdrew from the venture.

The Great Northern then obtained authority to go ahead with the project on its own responsibility and construction was actually under way when the rival roads reached an amicable arrangement as to joint use of trackage. The Southern Pacific allowed the Great Northern trackage rights from Chemult, Ore., to Klamath Falls, a distance of 78 miles, and also a half interest in the Oregon, California & Eastern, which extends 40 miles northeasterly from Klamath Falls into a rich virgin timber area.

The Great Northern immediately connected Bend and Chemult with its own rails and developed extensive terminals at Klamath Falls. It also effected an arrangement for the operation of its own trains over the connecting lines to Portland and Spokane, in which it owns a half interest.

Through these arrangements and with the construction of 46 miles of new railway the Great Northern was able to extend its independent operations from Spokane and Portland to Klamath Falls, distances of 571 and 404 miles respectively. Train service was inaugurated within a year from the date the commission granted authority for the extension.

The extension from Klamath Falls will be in a south-

easterly direction for the first 30 miles, passing through the productive Klamath valley and Tule lake irrigation districts, to Merrill; thence almost directly south to Lookout. Until the line swings southward it would parallel in a general way a line the Southern Pacific is building eastward to Alturas, where it has a branch connecting with its main east-and-west line at Fernley, Nev. This branch is about 60 miles east of the proposed Great Northern-Western Pacific line. The Southern Pacific's main line between San Francisco and Portland is about the same distance to the west.

Will Serve Lumber District

The McCloud Lumber company has a 46-mile railway eastward from Mt. Shasta, on the Southern Pacific's coast line, which, it is reported, will be extended to a connection with the Great Northern and Western Pacific at Lookout.

The Western Pacific's line will pass through Crescent Mills and Westwood, Calif., the latter being an important lumber manufacturing center that is at present reached by a Southern Pacific stub from its Alturas-Fernley branch.

The Western Pacific now owns a part interest in the Indian Valley, a 22-mile line between Paxton and Crescent Mills, while the Northern California, owned by the Red River Lumber company of Westwood, has an application pending before the Interstate Commerce Commission for permission to connect Crescent Mills and Westwood.

Decision to build the Great Northern-Western Pacific link is said to have been reached at a conference at San Francisco January 24, attended by Ralph Budd, president of the Great Northern; Harry M. Adams, president of the Western Pacific; Arthur Curtiss James, of New York, and C. H. Carey, Great Northern counsel for Oregon. The proposal was approved by the executive committee of the Great Northern's board of directors at St. Paul on February 2.

Frisco Clubs Secured $483,330 Business in 1928

ST. Louis-San Francisco employee clubs, through the efforts of the members, have secured over $483,330 in traffic, consisting of 6,438 carloads of freight, 8,678 less than carlots and 5,576 passengers since November 8, 1927, when they began the solicitation of traffic. Until this time three or four clubs of a nondescript nature existed and were primarily social in nature. On this date J. M. Kurn, president, issued a circular to employees in which he asked them to extend themselves in putting forth additionl efforts to secure a maximum of traffic, in view of the serious floods, cyclones and bad weather which had had a demoralizing effect on business. He appointed a central committee, consisting of four men, to promote the solicitation of traffic by all employees and to encourage personnel organizations and activity. Of the committee, Chester C. Kratky, chief clerk in the president's office, acts as the president's representative; Walter B. Wells, assistant traffic manager, has general supervision over the activities of employees in the solicitation of passenger traffic; John W. Nourse, passenger traffic manager, over passenger traffic; and W. L. Huggins, Jr., director of publicity and editor of the employees magazine, has direct supervision over personnel activities such as the organization of employee clubs, aiding club officers in providing speakers and entertainment, arranging club programs and also all publicity in connection with such activities.

The committee, after investigation and research into the best possible method of club organization, aims to have an employee club, consisting of workers and their families, in every city on Frisco lines, where more than 25 men are employed. It encourages clubs at all points, no matter how few the employees, but is anxious that clubs be formed at all towns where 25 or more employees are located. The clubs have duly elected officers, a meeting room for dances, socials, card parties, suppers, etc., and meetings not less than once each month. At the club meetings, the entertainment committee arranges for a diversified program of entertainment and business. Outside speakers from the towns' bankers, business men and professional men are invited to speak occasionally, and shippers are also invited to attend and speak.

The employee solicitation work in each town functions through a regularly constituted committee of the club, known as the Greater Traffic committee. All tips on prospective freight and passenger business secured by employees are forwarded to the chairman of the Greater Traffic Committee and he, in turn, immediately passes such information on to the responsible traffic officer in his town or territory. The selection of Greater Traffic Committee chairman and members is one of vital importance to the success of this movement, in that upon these men rests the burden of enthusing the employees to renewed efforts for increasing traffic. Several clubs have found that switch crew foremen or assistant yardmasters have been excellent men to hold this position. It is generally agreed that traffic or operating officers should not hold the chairmanship and that this position should be given to employees.

By January 1, 1928, 28 new clubs had been organized, making a total of 34 clubs. Soon after, a "Speakers Bureau" consisting of Frisco officers who could attend meetings of the various clubs on invitation and make business talks on the activities of their various departments was organized. By the end of 1928 the number of clubs had increased to 62, of which 45 reported the securing of the business mentioned above.

* * *

On the Southern Pacific in New Mexico

Co-Operation Aids Terminal Operation

Cleveland lines, through the medium of an operating committee, bring about economies

SINCE shortly after the expiration of federal control, a local operating committee has been maintained at Cleveland, Ohio, comprising one member from each of the lines entering that city, the object of which has been to improve the service by means of co-operative effort. The results obtained have amply justified the existence of the committee. Among the records that have been set up, 610,138 cars were received in interchange in the Cleveland terminal during the first nine months of this year, of which only 29 cars, or about three cars per month, had to have their lading transferred. This record is probably unexcelled for a terminal of this size. During the same period, a matching bureau, maintained in the offices of the committee, was successful in matching up 1,143 shipments, representing 46.1 per cent of those reported short, and in conjunction with the local freight agents, closed out 73.7 per cent of the number of short items submitted to the bureau.

The activities of this committee extend over the entire field of terminal operations and other excellent performances are cited later. The scope of the business handled at this terminal is given in Table 1, which shows

Table 1. Interchange Details, Cleveland Terminal

	All Lines Received in Interchange				Loads Billed Outbound from Cleveland, Ohio	
	Loads		Empty			
	1927	1928	1927	1928	1927	1928
Jan.	62,713	56,203	44,485	45,353	27,314	25,691
Feb.	56,588	54,488	37,268	41,608	27,732	27,469
March	69,595	65,007	50,065	48,639	35,436	33,996
April	64,023	63,097	40,269	48,263	37,463	32,109
May	67,456	73,160	50,809	50,158	37,898	37,917
June	66,754	66,634	40,318	53,521	40,080	42,857
July	66,792	67,735	49,001	50,313	39,530	39,595
Aug.	67,797	75,175	42,607	45,849	40,081	47,134
Sept.	68,074	79,639	51,217	48,492	38,647	47,024
	589,792	601,138	406,039	432,196	324,181	333,792

the comparative statistics as to the loads received in interchange and the loads billed outbound for the first nine months of 1927 and 1928.

Organization of the Committees

The Cleveland operating committee is the outgrowth of a similar body which handled the terminal affairs during the period of federal control. Its primary object is to improve the service by means of co-operation among the carriers and between the carriers and the shippers. Prior to the war, there were terminal organizations of various sorts in Cleveland, but their efforts were sporadic and not co-ordinated. The central committee was disbanded for a period of about two months after the expiration of federal control, and then reorganized on approximately its present basis. Since that time its scope of activities has been steadily widened and its influence for better operation increased.

The committee consists of operating officers representing the seven trunk lines and three terminal railways serving Cleveland, together with a permanent chairman and secretary. These railways are:

Baltimore & Ohio
Cleveland, Cincinnati, Chicago & St. Louis
Cuyahoga Valley
Erie
Newburgh & South Shore
New York Central
New York, Chicago & St. Louis
Pennsylvania
River Terminal
Wheeling & Lake Erie

The committee co-operates closely with the local associations and acts as a clearing-house as between the railways themselves and between the railways and shippers. A close relationship exists between the committee and the local freight agent's association, the local traffic association, the joint car inspection bureau, the perishables committee, the shippers' committee and the smoke inspection department.

The committee meets each Friday, with a representative of each of the member lines present. A wide variety of subjects is brought up at these meetings and important operating problems are settled that might, and formerly did, require weeks and months of oftentimes acrimonious correspondence to adjust. These weekly meetings also serve another purpose in the promotion of a co-operative spirit, for the local operating officers become thoroughly acquainted with each other and each other's problems. The outgrowth of this weekly contact is to be seen in the results obtained, that could have been arrived at in no other way.

As an instance of this co-operation, frequently, if one road is experiencing difficulty in pulling its interchange tracks, the delivering line will separate its loads and empties for the congested line, thus enabling the loads to be moved. The reasons for this are not entirely philanthropic by any means. The line performing the service expects and receives similar co-operation when con-

Table 2—Detail of Interchange and Transfer Record

	Cars Inspected		Local Cars Inspected By Joint Inspectors		Defect Cards Issued		Transfer Cards Issued		Adjustment Orders Issued	
	1927	1928	1927	1928	1927	1928	1927	1928	1927	1928
January	85,089	74,905	59,964	46,694	625	455	2	3	52	33
February	84,789	79,725	55,151	31,251	541	493	5	0	50	48
March	98,032	90,369	55,819	49,369	806	539	10	3	85	55
April	94,222	89,257	56,063	48,510	812	537	9	3	64	66
May	95,533	99,367	55,148	50,761	704	505	10	5	106	88
June	95,090	96,800	55,151	48,028	602	473	9	4	79	56
July	91,217	96,596	53,752	44,939	631	482	6	2	63	107
August	94,538	101,306	52,623	33,121	560	488	5	5	69	78
September	98,070	105,331	50,520	48,679	666	487	2	4	81	101
	836,580	833,656	494,191	401,352	5,947	4,459	58	29	649	632

ditions are reversed. Moreover, the traffic is kept moving and the shipper and receiver get better service. This redounds to the benefit of all concerned, as, in most cases when the freight is delayed, the shippers and receivers feel a certain amount of displeasure towards all of the lines handling the shipment, regardless of whether any individual road was in any way responsible for the delay.

Transfers Practically Eliminated

The Cleveland terminal has one of the best records in eliminating unnecesary transfers in the country. The transfer of cars there was never excessive, but in the past few years, it has been made almost non-existent. For example, in September, 1928, when 79,639 cars were interchanged, only 3 cars were transferred in the entire terminal. The detailed comparative figures as to the transfers this year are given in Table 2.

The apparent discrepancy between Table 1 and Table 2, as to cars interchanged and the number of cars inspected, is explained by the fact that the inspection merely covers cars handled on interchange or transfer tracks, while the interchange shown in Table 1 covers cars handled in "puller" service as well as through interchange tracks. The interchange tracks are covered by the joint inspectors and the "puller" service by inspection of the yards by local forces. Under the heading, "Local cars inspected by joint inspectors," in Table 2, cars are shown that were inspected in the yards of the various railways by the joint inspectors and not on the interchange tracks.

Running Repairs Made on Ground

All interchange tracks in the terminal are provided with supplies of small repair parts, such as grab irons, etc. Any necessary running repairs are made on the ground by the joint interchange inspectors. Their work includes adjusting high or low knuckles, repairing running boards, replacing defective or broken grab irons or steps and tightening loose bolts. The volume of this work is shown in Table 3. This not only avoids transfers, but it also expedites the movement of cars through the terminal, since, if it were not for these running repairs, the cars would have to be hauled back to the "rip" track of the delivering line for repairs.

The lading is not transferred in Cleveland unless the car is in such shape as to require practical rebuilding. In fact, unless the load is unusually heavy, the lading is not transferred, even for defects such as a cut journal, which is regarded as a defect requiring the transfer of the lading in practically every other terminal in the country. Instead, the car is put on the repair track, jacked up and the journal replaced. The chief joint inspector is the ultimate authority on transfers and issues the necessary permission. The charge made for transferring is actual cost, plus 10 per cent.

The small number of cars transferred is a distinct factor of economy of operation. Besides the numerous tangible and immediate benefits, there is an undoubted saving in the freight claim bill by eliminating these unnecessary and costly handlings and re-handlings of lading.

The Matching Bureau

The annoying and costly "exception" receives a great deal of attention in the Cleveland terminal, and the committee aids in correcting such errors. The showing in reducing overs and shorts previously quoted is largely attributable to the matching bureau in the office of the operating committee. In the operation of this bureau, copies of all "over" reports are sent to the matching bureau promptly. Shipments with or without marks are described on the over report in full, giving the weight, shape and probable use of the articles, as well as the contents of the boxes and other packages together with any other information that may serve to locate the owner and effect disposition.

Similar reports are sent to the matching bureau on all freight checked short. These reports are prepared in accordance with the rules of the freight claim division of the A.R.A., and care is taken to the end that all transfer notations with respect to short freight are transcribed from the waybills to the short reports.

Upon receipt of these reports, they are checked carefully at the matching bureau. From the information supplied, such as the case numbers, name of the shipper, point of origin, nature of the freight, contents of the packages, etc., it is possible to effect a proper reconciliation betwen overs and shorts in a large number of instances. The handling of this work by a centralized bureau, rather than by the individual railways alone has had the effect of very materially reducing claim bills on all of the railways in Cleveland.

Table 3—Cars Repaired by Interchange Inspectors

Month	1927	1928
January	970	1,299
February	984	1,362
March	1,065	1,438
April	1,183	1,355
May	1,089	1,454
June	1,125	1,367
July	1,045	1,325
August	1,327	1,329
September	1,448	1,350
	10,236	12,279

Improved Handling of Empties

The important items of per diem and unnecessary switching receive constant supervision by the committee and distinct economies have been effected along these lines. On March 1, 1928, the Cleveland lines began the practice of diverting empty indirect connection cars to the home route road haul line in the Cleveland terminal district, instead of requiring them to move home via oftentime circuitous routes. From the time this practice was inaugurated until November 1, 1928, 2,812 empties were handled in this fashion, saving at least one switching movement on every car and in some cases two or three. Since it has been estimated that each interchange in the Cleveland terminal costs $3.15, the saving involved can be appreciated. This saving is particularly noticeable in times of dull business, when the demand for empties is not great. The number of empties so handled depends, of course, upon the amount of business moving. If the demand is heavy, fewer cars are returned empty.

The handling of these empties via direct connections is governed by the car record offices, in conjunction with the operating committee. In the absence of a previous home record, the interchange clerk telephones to determine the regulation home route. If it is indirect, the district yard clerk telephones the car record office and a direct route is arranged.

Interchange Accelerated

By co-operation through the committee, the handling of cars delivered to connections without billing has been materially improved and the number of cars so delivered has been reduced. Previously, these "no-bills" were returned to the delivering line, thus involving each of such cars in two additional switch movements, which have now been eliminated. Under the present arrangement, these cars are held and reported by the receiving line to the office of the committee, where action is taken to secure the billing at once. In cases where

the bills are not forthcoming immediately, the receiving line is now protected and any per diem that accrues is chargeable to the delivering lines under the local reclaim rules.

Record of "No-Bills" is Kept

A record is kept of all "no-bills" delivered by each line, and this is read publicly at the weekly meetings. This public announcement of their faults, together with continual watchfulness on the part of the committee to eliminate careless handling, has reduced the number of "no-bills" to less than 20 per week, including all such cars, even though the billing may have been delayed only an hour or two.

The committee also "polices" the interchange tracks to eliminate sharp practices sometimes indulged in by yardmasters to avoid per diem. Under the present ruling all cars to be delivered to a connecting line must be ready for pulling before 11 p.m., if per diem is to be avoided by the delivering line.

The daily interchange report is carefully scanned in the offices of the committee. If there are any accumulations or delays, they are threshed out at the weekly meeting and the cause is ascertained. This careful and impartial checking has had an excellent effect on the local yardmasters.

No Embargoes on Industries

There has been no embargo placed against a receiver in the Cleveland terminal since 1920. Whenever any industry appears to be in danger of being swamped by incoming cars, a representative of the committee calls on the shipper to discover the reason. In cases where the industry has outgrown its siding capacity and no additional sidings can be built, two or even three times daily switching service is afforded. After some years of honest effort on the part of the railways, coupled with the co-operation of the shippers' and receivers' committee of the Chamber of Commerce, practically all receivers in the Cleveland terminal now co-operate with the railways in this regard. This co-operation aids service and prevents embargoes. It has also enabled the lines entering Cleveland to abolish seasonal embargoes in that terminal such as those sometimes issued on California grapes, thus avoiding the inevitable expense and loss of revenue to the railways which result from such embargoes.

One of its unusual activities is that of serving as a district legislative committee. It is aided in this regard by the esteem in which it is held among the Cleveland shippers. When a bill is introduced in the city or state legislative bodies that is inimical to the railways and serves no good purpose to anyone else, the committee, through its contact with the shippers and receivers, is able to present to them the railways' side of the case. In a number of instances, this has been done to such effect as to defeat harmful and pernicious legislation.

There are numerous other activities in which the committee engages, all tending toward a more efficient terminal operation by means of co-operation.

A New Tableware For Dining Cars

A NEW tableware, called Dirigold, is being introduced into the railroad field for use on dining cars. This material, produced by the Dirigold Corporation, Kokomo, Ind., combines several features which are said to adapt it to railway dining car service as well as for the uses to which it has been put in hotels, clubs and private homes. Foremost is its resemblance to gold, both in its high polish and the mellowness of its luster. It is also a stainless material, having a resistance to corrosion which prevents it from tainting foods or suffering discoloration by them. The polishing which tableware gets in routine use is ample protection against tarnishing. It is said that it has the strength and a degree of hardness comparable to that of steel, so that the knives can be sharpened without injuring their surfaces, while other articles are protected from denting and cracking if they should fall. Being solid throughout, the ware does not require periodic replating. The Dirigold articles are distinctive in design and are formed not only into knives, forks and spoons, etc., but into such articles as cups, dishes, fruit bowls, plates, coffee pots, sugars and creamers and other hollow ware. For the past year, the ware has been in use on private cars of the Illinois Central.

Table Set with Dirigold Tableware and Hollow Ware for Dining Car Service

A Shipper on the Railway Situation*

"Have our railroads received their fair share of the prosperity to which they have contributed so substantially?"

By Robert C. Ross
Formerly Chairman, Mid-West Shippers' Regional Advisory Board

THE program of rehabilitation of our railroad system upon its emergence from government control was approached by railway management with characteristic enterprise and courage.

In 1923, about the time this board was organized, they embarked upon a most extensive program of improvement. Large amounts of capital and energy have been expended in providing the most modern facilities to move the nation's commerce. This program was conceived on the theory that the public interest required a transportation system commensurate with its growing industrial and agricultural productive facilities, that the lessons learned in war and post war years had demonstrated this fact, and that the public was inherently fair and would realize the necessity and permit the carriers to earn a fair return on the capital so expended. The carrying out of this program and the adoption of the policy of organized co-operation with industry and agriculture through the regional boards have been responsible for the present satisfactory transportation we enjoy.

Much has been written and more has been said of the benefits to the public derived by this rapid and dependable service, and I will not enumerate them. All authorities admit that they have been one of the greatest factors in the prosperity the nation has enjoyed in recent years. Certainly business has accommodated itself to the present high grade standard of service, and any deterioration in its quality would have a most disastrous effect.

The Railroads' Profits

On the other hand, can it be said that the confidence reposed in the fairness of the public has been justified? Have our railroads received their fair share of the profits from the prosperity to which they have contributed so substantially? And what are the future prospects of their industry?

It is true that the Commission under the act of 1920 set 5¾ per cent as a fair return on the tentative valuation, and that this adjustment if consummated would have been fairly satisfactory to the carriers. As we all know this return has never been realized. Disappointment is natural and efforts to force the requirements of the law have been proper and only the plain duty of management to its stockholders. There have, however, been extenuating circumstances. While the return for the past five years will average a fraction less than 5 per cent on invested capital, money has been easier; it has been possible to attract capital with a somewhat lesser return than was the case at the time the standard return figure was set. I disclaim competency as a financial expert, but it does seem that generally speaking the profits from railway operation in the past five years have not been altogether unsatisfactory.

Our own northwestern roads are properly excepted from this statement and cannot be blamed for their efforts to enhance their revenues to a level comparative with that of other districts. Fortunately, they have been doing much better lately.

It is apparent, however, that the public is scarcely in position to boast about its generosity, as the returns from railway investment in the five pre-war years, 1909 to 1913, were slightly more than in the 1923-1928 period; the average figures for the former years being 4.97 per cent as against the average of 4.82 per cent during the recent period.

Of course, these comparisons should also be analyzed in the light of the present-day easier money conditions, but we should also not forget the dissatisfaction with earnings in the immediate pre-war era and the resulting failure properly to maintain and equip the railroads to which many of our war-time troubles were charged.

Fears for the Future

We are interested in the frame of mind of our railroad executives, because the improvement in the morale of the railroad organizations has had as much to do with the better service we enjoy as any other one factor. Unfortunately, there is an unusual undercurrent of uncertainty and unrest prevalent in railway circles which is not confined to those habitual pessimists with which all organizations are more or less afflicted. As I see it, this is due to fears for the future, rather than discontent with the results of the recent past, for it is a fact that many unusual problems confront the carriers at this time.

Profits Derived from Economies

The most important of these is the manner in which profits have been obtained. The railway net income of recent years is not the result of an unusually favorable rate structure. In fact, due to what has been termed the "nibbling process", there has been a gradual decline in the ton-mile revenues. Also, there has been a gradual decline in the gross revenues. The profits have been derived from most substantial economies in the management and operation of these systems.

"Necessity is the mother of invention", and if the pressure for profits had not been so severe it is possible that the operating records would not have been so satisfactory. Perhaps the situation has been fairly healthy after all. Is it human to expect, however, that the same ratio of economies can be maintained indefinitely? I believe our railroad friends think otherwise, and that even present returns cannot be continued in the face of constant attrition of the rate structure. Herein lies the principal reason for the present unrest.

More Business Needed

But there are other problems facing the carriers. Undoubtedly, a continuous substantial increase in the volume of tonnage handled would assist materially in meeting lower rate trends. I believe the railroads today are suffering from the prevailing industrial and

* Mr. Ross, who is traffic manager of Joseph T. Ryerson & Son, Inc., made these remarks on retiring recently from the chairmanship of the Mid-West Shippers' Regional Advisory Board, after serving five years in that capacity.

agricultural complaint of surplus capacity, and could handle with ease a substantial increase in business, with a consequent reduction in unit overhead costs.

Some years ago we were very much worried, and justly so, about their ability to keep pace with our industrial progress. Due to the appearance of competing mediums and other reasons the continuous upward trend of traffic volume is disappearing. The line is flattening out. It has taken a sharp downward direction insofar as passenger traffic is concerned. I have eliminated the abnormal war years, and those years which were affected by war conditions, from any figures that I am quoting in this connection. The average annual passenger miles from 1909 to 1913 inclusive were approximately 32,500 millions; from 1924 to 1928 inclusive ('28 estimated) 34,700 millions. But contrary to the upward trend during the first period, it has been continuously downward in the last five years. 1924, 36,300 million; 1928, estimated 31,600 million. These figures show a very material decrease in the traffic to which the railroads have looked for a very substantial portion of their earnings. This, no doubt, is the effect of automotive transport. Regardless of what we may think about it, it is here to stay. What aviation may do to the long haul passenger traffic in the future is another question.

Can the carriers regain their lost profits by the addition of these new mediums of transport to their own sales lines?

Freight Traffic Tendencies

Can the growth of freight volume be expected to make up the losses?

The facts are that the revenue ton-miles for 1928 will be less than the average of the five years from 1924 to 1928 inclusive. That is also true of gross revenues. There have been few better business years than 1928. The trend is upward, of course, but not so rapidly as heretofore. The motor truck is taking its due. Market localization of many products, principally of low grade, is in process, requiring wise treatment of the rate structure to protect both railway and shipper interests. I was told the other day by the shipper of a low grade commodity, which moves in substantial volume, that ten or fifteen years ago they considered the sales territories of their various plants to be within a radius of about three hundred miles. Today, due to the freight rate situation, they make very few sales beyond one hundred and fifty miles radius.

Then there is the question of increased wages to railway labor. I am informed that for the full year 1928, increases in basic wage scales will increase the railway payroll about 230 million dollars over what it would have been had the 1923 wage scale remained in effect. The importance of this is indicated by the fact that this amount is approximately 20 per cent of the estimated net railway operating income for the year. I think it is true, however, that railway labor is much more efficient than it has been. But if rates are to decrease steadily and labor costs go up, it will require a mighty efficient organization to avoid red figures at the end of the year.

Rate Making Machinery Terrible Mess

Our rate making machinery is a terrible mess. We have substituted most awkward and expensive court procedure for the business judgment of seasoned and experienced traffic executives. In a few years, if present methods are continued, the rate departments of the railroads will be unnecessary, and the government will probably issue the tariffs.

Recriminations as to the responsibility for the present deplorable condition, which pleases neither party of interest, do not help the situation. There have been suggestions that an attempt be made by the carriers to adopt the regional board idea of co-operative machinery to solve in part this vastly more difficult problem. This, to me, has some promise provided such organizations are separate and distinct from the present boards. We could scarcely make the present situation any worse.

Railroads Gain Public Consideration

This is a complex age. We all have our troubles, and a lot more expected to come, most of which do not happen. The railroads, however, have earned sympathetic consideration by the public, of any conditions which disturb them, and the shippers' selfish interest requires it.

I believe most shippers desire to exhibit a broad gage attitude in their policies toward the carriers. Some do not. There are too many industrial traffic departments and bureaus which justify their existence solely by the reductions in rates they are able to secure, regardless of their effect upon carriers' revenues.

Of course, many reductions in rates are absolutely justifiable. Frequently, they encourage traffic and increase net revenue, but it seems to me, in our consideration of rate adjustments, that we should be dominated by the realization that first-class transportation is a fundamenal of good business, and that railroad revenues must be conserved if this is to continue; and that further diminution of railroad profits lessens the purchasing power of one of our largest users of labor and industrial products, thus seriously affecting general business.

I believe all shippers here are actuated by the broad general policies, which I have mentioned, and with your assistance in educating those who have not seen the light, with your continued co-operation with the railroads as exemplified by the board movement, I believe we can depend upon the genius of American railway management to continue furnishing us the finest and cheapest transportation enjoyed by any nation of the world.

* * *

A Boston & Albany Train, Near Newton Centre, Mass.

New Books

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

"Conquering the Cascades Section," Railway and Marine News, January, 1929. Another sort of "thriller" in which text and advertisements collaborate to make an interesting contribution to the written history of a great event. Illustrations, maps, and tables. 66 p. Published by Railway and Marine News, Seattle, Washington. 50 cents.

Elektrische Anlagen der S B B zum Abschluss der ersten Elektrifikationsetappe, Schweizerische Technische Zeitschrift, December 27, 1928. Special number celebrating the completion of the first section of the electrification plan of the Swiss Federal Railways. While knowledge of both German and railway electrification terms is necessary for complete appreciation of the text, the illustrations, maps, tables, and diagrams make clear the extent of the work to laymen. 51 p. Pub. by Art. Institut Orell Füssli, Zurich, Switzerland. 2.80 Swiss francs.

The Federal Antitrust Laws with Amendments. List of Cases Instituted by the United States and Citations of Cases Decided Thereunder or Relating Thereto. The 18 laws include the Sherman Anti-trust Act, the Clayton Act, and the Panama Canal Act, and the decisions are grouped under the presidential administrations in which they were handed down, from Harrison to Coolidge inclusive, thus providing a way of relating decisions affecting railroads, for example, to contemporary decisions affecting other industries. 247 p. Pub. by U. S. Govt. Print. Off., Washington, D. C., 35 cents.

The Railway Industry of Great Britain, 1927, by W. V. Wood and C. E. R. Sherrington. Section A takes up the general situation 1923-27, the new basis of charging, extent of the railway system, capital expenditure, and ancillary services. Section B deals with financial results, and Section C with miscellaneous statistics, concluding with a statement of the present position. Memorandum No. 11, Royal Economic Society, January, 1929. 26 p. Pub. by the Royal Economic Society, London, England.

A Temperature Study of Car Journals in Motion. "This study is, in nowise, complete, there being many features which could not be investigated because of limited time, but the information contained in this work, is offered in the spirit of pioneering a new phase of an old field. . . . The road work was done on the Union Pacific Railroad between Omaha and North Platte, Nebraska . . . approximately 290 miles." p. 3 Charts and tables. 29 p. Pub. by Universal Packing and Service Co., Chicago, Ill. *Apply.*

Periodical Articles

Copper's Role in Modern Transportation. An illustrated presentation of modern (and some ancient) means of transport ranging from gondolas in Venice and camels in Morocco to the latest in railroad, highway, and air transport. Review of a century of American railroading, p. 10-12, concluding with a compilation of the amounts of copper used in various ways on railroads. Bulletin of the Copper & Brass Research Association, Feb. 1, 1929, p. 1-16.

Fashions in Finance—The Merger. An editorial estimate of the present status of mergers. "Let us see what industrial factors can be safely merged . . . Third, the railroads . . ." p. 944. Commercial and Financial Chronicle, February 16, 1929, p. 943-944.

Miller Has Always Minded the Other Fellow's Business, by Wm. S. Dutton. A sketch of Henry Miller, President, Terminal Railroad Association of St. Louis. Illustrated. American Magazine, March, 1928, p. 58-59, 123-124.

Looking Backward

Fifty Years Ago

On February 12 the operation of the Denver & Rio Grande [now the Denver & Rio Grande Western] was taken over by the Atchison, Topeka & Santa Fe as the Denver & Rio Grande division of the latter railroad.—*Railway Age,* February 20, 1879.

Twenty-six railroads operating in Illinois recently reported to the state railroad commissioners that the average life of their locomotives is 15¼ years. The average life of other units of equipment and structures is as follows: Passenger cars, 15¾ years; stock cars, 10 years; freight cars, 11½ years; iron rails, 7 years; steel rails, 14 years; oak ties, 7 years; pile trestles, 9 years.—*Railway Age,* February 20, 1879.

Discussion of the Reagan bill to regulate interstate commerce and to prohibit unjust discriminations by common carriers has been passed by the House of Representatives and a week ago the Senate sub-committee, to which the bill has been assigned, opened hearings on it. Among the railroad men who appeared against its passage was Chauncey M. Depew, general counsel of the New York Central & Hudson River [now the New York Central]. He declared it to be the judgment of all railway men that there should be no haste in legislating upon this subject, and that the wisest course was to appoint a commission for extended investigation. He declared that the natural laws of trade are enough to govern transportation.—*Chicago Railway Review,* February 22, 1879.

Twenty-Five Years Ago

The first meeting of the newly elected Canadian Railroad Commissioners was held at Ottawa, Ont., on February 9.—*Railroad Gazette,* February 26, 1904.

The Chicago, Rock Island & Pacific has inaugurated a change in its organization from divisional to departmental, whereby the maintenance of the road will be primarily in charge of the division engineers who will report to the engineer of maintenance of way. This change relieves the division superintendents of any responsibility for the physical condition of their divisions.—*Railway Age,* February 26, 1904.

Charles D. Young, assistant to the master mechanic of the Columbus shops of the Pennsylvania, has been selected as representative of the Southwest system of that railroad in charge of its World's fair exhibit at St. Louis, Mo. W. P. Kenney, chief clerk in the general freight office of the Great Northern, has been appointed assistant general freight agent at St. Paul, Minn.—*Railway Age,* February 26, 1904.

Ten Years Ago

The Secretary of War has announced that the President has approved the sending of two companies of American railway troops to Murmansk to facilitate the prompt withdrawal of American and Allied troops from North Russia.—*Railway Age,* February 21, 1919.

The fact that there is practically no prospect for any railroad legislation at this session of Congress, beyond the appropriation of the addition to the revolving fund, was emphasized when the House Committee on Interstate Commerce on Monday decided not to hold any hearings on the proposal to extend the period of federal control. The Senate committee, which has been holding hearings almost daily since January 3, has also indicated a loss of interest in the subject as far as this session is concerned.—*Railway Age,* February 21, 1919.

Odds and Ends of Railroading

All Car Repairers

Mrs. J. S. Stroud of Huntington, W. Va., is not only the wife of a car repairer helper, but she has four sons who are all car repair apprentices in the local shops of the Chesapeake & Ohio.

Noble Railroadess

Senorita Pilar Careaga, daughter of the Count of Cadagua, has recently been appointed to a position corresponding to road foreman of engines, on the Northern Railway of Spain, after qualifying as a locomotive driver.

Enginehouse in Two States

The New York, New Haven & Hartford boasts the only enginehouse that is situated in two states. The state line passed directly through the enginehouse at Blackstone, leaving the major portion of the house in Massachusetts, but with two stalls in Rhode Island.

Champion Mountain Climber

"Uncle George" Treworthy, engineer on the Maine Central, might lay claim to the senior mountain-climbing championship. Uncle George, who is 66 years old, has climbed Mt. Katahdin three times in the past three years. He attributes his spryness to climbing in and out of cabs of steadily increasing height, for the past 33 years.

Nature Note

A Johannesburg message states that near Stranger, on the Natal North-coast line, a hippopotamus charged a passing train. The crowd that gathered annoyed the animal, which charged and dispersed the onlookers. The local magistrate expressed himself unable to authorize the shooting of the animal under the game laws, pending the decision of the Union authorities. "The hippopotamus is still at large and is regarded as a public danger."—Railway Gazette.

Another Scotch One

"Tickets, please," announced the conductor.

Sandy McPherson absently fumbled in his pockets and another passenger, noticing his confusion, said, "You have your ticket in your mouth."

After the conductor passed, the passenger remarked, "You suffer from an absent mind, sir."

"Not on your life, mon," replied Sandy, "I was suckin' last week's date off."

—Santa Fe Magazine.

Just a Boy After All

Mihai may be king of Rumania, but he is only seven years old and, according to press dispatches, has the normal reactions of a boy of that age. Rumania's first heavy freight locomotive was christened "King Mihai, the First," by Dowager Queen Marie, and the ceremony was attended by the entire royal family, including the youthful king. After the various mechanical details had been explained, the boy-king astounded those present by explaining in detail how an electric locomotive runs. His mother had given him a toy electric locomotive as a Christmas present, which accounted for his knowledge. The king then scrambled into the cab, and with evident delight, rode for a mile on the new locomotive.

Santa's Helper

The Pennsylvania was helper to Santa Claus on December 23, when it ran a special train carrying several thousand dolls to the children of Louisville, Ky. The dolls, traveling just like children, arrived in Indianapolis from New York in a special car in the American, No. 65. The car was uncoupled from the flyer and attached to a special train for Louisville. The dolls were for Christmas distribution by a Louisville newspaper. The newspaper, a few days before, had announced a subscription contest, offering as an inducement, a doll free with every two new subscriptions. The demand for them was so great that the supply on hand was not sufficient. To meet this emergency, a representative of the paper went to New York and obtained the dolls. He requested a special car to be placed in the American and the special train from Indianapolis to Louisville. The requests were granted, the dolls arrived on time and thousands of youngsters were made happy.

A Lowly Beetle Moves Traffic

The Southern Pacific must thank a bark-boring beetle, dendroctinus brevicomis, for a large portion of the traffic—lumber—which will originate on the extension of the Modoc Northern when it is completed between Klamath Falls, Ore., and Alturas, Cal., this year. Only recently this beetle has infested the Modoc National Forest and to allow the best use of the stand the United States Forest Service has approved the immediate cutting of the timber. Cutting of the infested timber area will also combat the beetles' progress in other forests. The construction of the line is coincident with rather than contingent upon the foresting operations, though its completion will simplify the marketing problem of the mill owners.

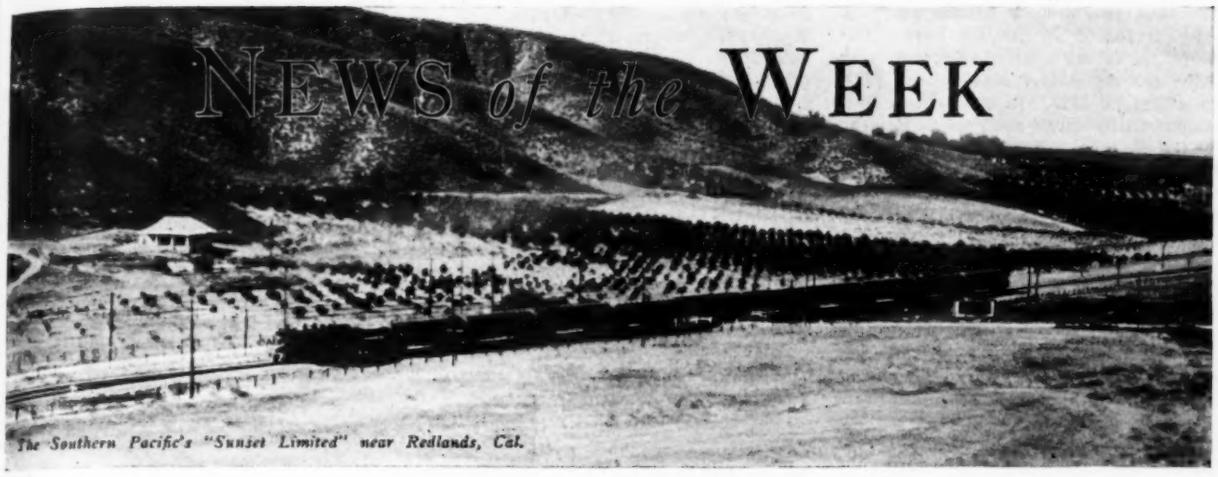
Hereditary Railroaders

Railroading, as a career, is accidental to many. Others choose it deliberately. Still others seem to inherit railroading from their ancestors. In the latter class, is Clifford Massey, hostler helper at Dubuque, Iowa, on the Illinois Central. Massey's maternal grandmother, Mrs. B. Dodd, was employed by the I. C. as a pumper for 20 years. His grand-uncle, John Dinsmore, helped lay rails when the I. C. was built. Another grand-uncle, Michael Gillaes, was at one time vice-president of the southern lines. His father, George Massey, has worked on the I. C. for 25 years. His cousin, Mrs. John Sullivan, worked on the I. C. as a secretary for a number of years. Four of his uncles are employed or on the pension list of the I. C. John Dodd was assistant supervisor of water service, George Dodd was a bridge foreman, Frank Dodd was a signal installer, while Charles Dodd is now employed in the waterworks department. Massey's brother, Louis, is also employed by the I. C., as an engine wiper.

Lathe That Made Confederate Cannon Retired By C. & O.

Going the way of all railroad veterans, after an active service period of 74 years, an old driving wheel lathe at the Hinton, W. Va., shops of the Chesapeake & Ohio, was retired from the service of the road when modern equipment was recently secured to take its place. The passing of an old piece of railway equipment to the junk pile usually brings forth little comment, but in the case of this particular machine, there is some interesting history to be related. In 1854, some 74 years ago, the Bemont-Dougherty & Thomas Company constructed what was then the finest and most up-to-date driving-wheel lathe for the Virginia Central Railroad Company, an antecedent of the Chesapeake & Ohio, assigning it their serial number, 13. For a number of years, the "Old Soldier," as it has commonly been called, rendered faithful daily service. Then came the Civil War. Recognizing the utility of the machine, the Confederate government pressed it into the service to turn out cannon for the followers of Robert E. Lee. Eventually, following the close of the war, the then historic lathe was returned to the railway company and was installed in the old Seventeenth street shops in Richmond, Va., where its memory is still vivid in the minds of some of the oldest employees. Later it was transferred to the Huntingdon, W. Va., shops and finally in 1912, was transferred to the Hinton shops. The "Old Soldier" is unique in that ever since its acquisition by the Chesapeake & Ohio, and in fact, practically ever since it was built, it has given constant daily service—a truly remarkable performance.

NEWS of the WEEK



The Southern Pacific's "Sunset Limited" near Redlands, Cal.

J. L. GAINEY has been appointed secretary of the State Railroad Commission of Mississippi; headquarters, Jackson.

THE RAILWAY ACCOUNTING OFFICERS ASSOCIATION will hold its annual convention at the Hotel Cleveland, Cleveland, Ohio, on April 30-May 3.

THE INTERSTATE COMMERCE COMMISSION has postponed from February 19 to March 14 the oral argument on the proposed report by Commissioner Mc Manamy in connection with the investigation of the use of private or office cars.

THOMAS A. DOOLEY, the veteran district manager of the St. Louis plant of the American Car & Foundry Company, was honored by a dinner given in celebration of his fiftieth anniversary in the service of the company, at the Hotel Chase, St. Louis, Mo., on February 16.

THE RAILWAY CLUB of Pittsburgh, (Pa.) will hold its next meeting at Fort Pitt Hotel on Thursday evening, February 28, the meeting to be preceded by a dinner at six o'clock. The paper of the evening will be by Captain S. E. McMaster, of the Pennsylvania, on Aviation as It Affects the Railroads.

ROSCOE C. MCCULLOCH of Canton, O has been appointed a member of the Public Utilities Commission of Ohio, succeeding Frank W. Maullar. Mr. McCulloch has been selected as chairman. Judge Frank W. Geoger of Springfield, has been appointed a member of the Commission, to succeed James W. Huffman.

THE ANNUAL CONVENTION of the Purchases and Stores division of the American Railway Association has been changed from the St. Francis Hotel, San Francisco, on June 19, 20 and 21, to the Palace Hotel, San Francisco, on June 24, 25 and 26, as announced by W. J. Farrell, secretary.

THE SENATE COMMITTEE ON INTERSTATE COMMERCE, on February 11, voted 8 to 6 on a favorable report to the Senate on the confirmation of the appointment of Pat M. Neff for a new term as a member of the United States Board of Mediation. Confirmation was opposed by Senator Mayfield, of Texas, and by representatives of the railroad labor organizations who testified at hearings before the committee.

THE DENVER LAND COMPANY, representing a group of taxpayers in the Moffat tunnel assessment district, has filed an appeal with the Colorado Supreme Court from the decision of a district court which sustained the validity of the $8,750,000 of supplemental bonds issued by the Tunnel Commission for construction.

THE CANADIAN NATIONAL, by way of experiment, has painted one of its 4-8-4 type locomotives in bright colors, the predominating color being emerald green which has been applied to the boiler shell, tender tank, and tires. The smoke box, cab, coal hopper and feedwater heater are finished in black, while a brilliant red has been applied to the front and rear buffer beams, the wheel spokes and the rod fluting. The locomotive is used in passenger service between Montreal, Que., and Sarnia, Ont.

BION J. ARNOLD, consulting engineer and president of the Arnold Engineering Company, Chicago, has been selected as the recipient for 1929 of the Washington Award, an award made annually by the Western Society of Engineers, Chicago, acting in co-operation with the four national societies of civil mechanical, electrical and mining engineers, to an engineer who has made an outstanding contribution to public welfare. Mr. Arnold was selected for this honor because of his "pioneering work in the engineering and economics of electrical transportation", much of which was done for the steam railways.

A.R.E.A. Banquet Speakers

The annual banquet of the American Railway Engineering Association, which will be held at the Palmer House, Chicago, on Wednesday evening, March 6, will be addressed by the Honorable Vincent Massey, envoy extraordinary and minister plenipotentiary from the Dominion of Canada to the United States of America, W. R. Cole, president, Louisville & Nashville and the Honorable James S. Parker, chairman, committee on Interstate and Foreign Commerce, House of Representatives.

Radio on New York Central Freight Trains

The use of radio communication between the caboose and the locomotive of long freight trains has now been continued on one train of the Mohawk division of the New York Central (about 150 miles) for upward of a year and the officers of the road are so well satisfied with the results of the experiment, in the promotion of convenience and economy, that application has been made to the Federal Radio Commission at Washington for permission to install the apparatus for use on five additional trains.

Falls Road Double Tracked

The New York Central has installed automatic train control (voluntarily) on 75 miles of line not heretofore reported. It is on the "Falls Road" the line from Rochester, N. Y., westward, to Suspension Bridge, the double-tracking of which, except for 600 ft. at Lockport, over a single-track bridge, has just been completed. This line has heretofore been worked mostly by the manual block system, but along with the completion of the automatic block signal system, the train stop system has also been installed. By this line trains between the East and Chicago, over the Michigan Central, cross the Niagara river at Suspension Bridge. Using this route they avoid the congestion incident to passing through Buffalo, though the through distance is about the same as when trains go to Buffalo and cross the river at Bridgeburg.

Commercial Stocks of Coal

Consumers' stocks of bituminous coal on January 1, 1929, amounted to 41,800,000 tons, according to the Bureau of Mines. On October 1, 1928, the date of the last survey, the stocks were 41,100,000 tons. In October production was in excess of consumption and stocks increased by 1,300,000 tons, reaching 42,400,000 tons on November 1. Thereafter production

declined while consumption increased and in the last two months of the year the stocks decreased by 600,000 tons. The present stocks are somewhat below those at the corresponding seasons of 1924, 1925, 1926, and 1927. In comparison with the abnormally large reserves of a year ago, the present stocks show a decrease of 13,700,000 tons.

The average consumption during the fourth quarter of 1928 was 10,416,000 tons. Exports averaged 359,000 tons and the total of consumption plus exports was 10,775,000 tons. In comparison with the corresponding period of 1927, the rate of consumption shows an increase of 5.1 per cent, reflecting greater industrial activity, particularly in the automotive field.

Stocks of railroad fuel have continued to decline during the last three months and at the beginning of 1929 were lower than at any time since June, 1926. On January 1 the American Railway Association reported that 9,237,000 tons were on hand. This is a net reduction of 636,000 tons since October 1. The stocks on comparable dates in recent years are shown below.

January	1, 1927	13,499,000 tons
January	1, 1928	14,729,000 tons
April	1, 1928	14,486,000 tons
July	1, 1928	11,765,000 tons
October	1, 1928	9,873,000 tons
January	1, 1929	9,237,000 tons

North Western to Abandon Its General Office Building

The Chicago & North Western, on May 1, will abandon its office building at Jackson boulevard and Franklin street, Chicago, and will move its general offices to the Chicago Daily News building which is now under construction adjacent to the North Western passenger terminal on the area bounded by Canal, Madison and Washington streets and the Chicago river. In moving into new quarters the North Western will make use of its fourth general headquarters in Chicago and will abandon a building which has been in use since it was constructed by the railroad in 1905.

In the offices in the Daily News building the railroad will occupy exclusively the ninth, tenth, eleventh, twelfth, thirteenth, fourteenth, fifteenth and sixteenth floors and a portion of the ground floor and basement, which will be served by a separate bank of five elevators leading from the pedestrian concourse to be constructed above Canal street to connect the office building with the train level floor of the North Western station. The new offices will not only serve to consolidate the general office functions of the railroad at one point but will represent a more efficient use of space. In the North Western building, exclusive of the basement and attic, the offices occupied a total of 160,000 sq. ft. of floor area, while the new quarters contain only 135,000 sq. ft. of area. The activities of the engineering department, which have been scattered through a number of floors, will be consolidated on one floor and the accounting department, which has been using space on four different floors in the old building, will be confined to two floors.

The telegraph department and the telephone switchboard will be located in the passenger station and pneumatic tubes will connect the telegraph department with the new mail room and various departmental offices in the new quarters. The new location will afford more natural light to the workers, of whom there are about 2,000, and from an operating standpoint will be more economical than the old building.

The new offices have been leased for a period of 10 years with the option of renewal for a second 10 years. The present building, which is of granite construction, and site upon which a valuation of $3,000,000 has been placed, have been offered for sale or lease by the railroad.

Annual Report N. Y. Public Service Commission

The New York State Public Service Commission, which under amendments to the law has now become the state division of the Department of Public Service, has issued its annual report for 1928. The formal orders issued by the Commission for the year, numbered 1,902, exceeding by 227 the number of orders issued in any calendar year since 1921. Included in these orders are 151 certificates of convenience and necessity for the operation of motor bus lines; 281 for eliminations of grade crossings, prior to the constitutional amendment and 758 for crossing eliminations since the adoption of the constitutional amendment.

The commission recommends that it be granted additional and specific authority over holding corporations which control public utilities.

The chapter on steam railroad property and service is very brief, note being made of the inspections of locomotives and track and what has been done by the railroads in the installation of automatic train control. The usual table of rail failures on each steam railroad shows a total of 2,137 cases, which includes 550 in which transverse fissures figured. Most of the rail breakages were in territory where track circuits are used for automatic signals and the signals gave notice of the breakages. Nothing is said as to what, if any, damage was done to trains. The reference to the Sperry detecting car which has been put in use on the New York Central, testing rails for transverse fissures, says that on account of the low speed at which the car has to be moved, its use is hampered on lines of heavy traffic.

The change in the law regulating the elimination of highway grade crossings, by which towns and villages are relieved from paying any portion of the cost and under which the state now pays 40 per cent and the counties 10 per cent, has caused some delay in the administration of the law. The summary statement says that the number of orders directing eliminations in 1928 was 123, making 311 to date, and the number of crossings actually eliminated to date is 105. There are now 38 projects, covering 54 crossings, under construction or under contract. The total amount paid out by the state on account of grade crossings eliminations, under Section 91 of the law, has been, to date, about $4,000,000.

Traffic

The Traffic Club of Chicago will hold its twenty-second annual dinner at the Palmer House, Chicago, on February 28.

The Great Northern has opened a passenger office in San Francisco, Cal., at 679 Market street. The freight department of this road in San Francisco is now in the Monadnock Building.

At the twenty-second annual dinner of the traffic club of Chicago, which will be held on February 28 at the Palmer House, Doctor George Vincent, president of the Rockefeller Foundation will be the principal speaker. His subject will be "A Scientific Adventure."

The Southern California Passenger Association, has this month, published the first issue of "The Agent", a magazine to be sent to ticket agents and information bureaus of the principal ticket offices in the United States. This publication is designed to stimulate travel to the Pacific coast and also to promote a better understanding of railway traffic problems.

At the annual meeting of the Denver Traffic Club on February 9, the following officers were elected: President, Charles I. Fritzgerald, agent of the American Railway Express Company; vice-Presidents, W. F. Burr, traffic manager of the Daniels & Fisher Company, and Erwin Tears, passenger agent of the New York Central; and secretary, W. F. Brewer.

The Bennettsville & Cheraw, a short railroad in South Carolina, according to an announcement issued by the Railroad Commission of South Carolina, will establish, on March 12, store-door delivery. The new arrangement is put in effect because of the competition of motor truck lines. It applies, however, only to one town,—Bennettsville.

The Central of Vermont announced recently that it will operate a 32-car Yale-Harvard regatta observation train during the races on the Thames river at New London, Conn., on June 21. The varsity race will be rowed upstream this year starting at 6 p.m. from the bridge which spans the Thames north of New London and will finish opposite the spot where the observation train of the Central Vermont will be located.

The Chicago & Eastern Illinois is now running the Chicago-Pensacola sleeping cars on the Dixie Limited instead of the New Orleans Special, thereby reducing the time 1 hr. and 35 min. Cars now leave Chicago at 2 p.m. instead of 12:25 p.m. and arrive at Nashville, Tenn., at 1:35 a.m. instead of 2:15 a.m. and Pensacola over the Louisville & Nashville at 3:45 p.m. as at present. The northbound schedule has also been reduced 1 hr. 15 min.

Examiners Find Southern Livestock Rates Generally Reasonable

The Interstate Commerce Commission on February 19 made public a proposed report by Examiners Copenhafer and Parker in Part 9 of the rate structure investigation, relating to livestock rates in southern classification territory, recommending that the present interstate rates, which are based on a distance scale, be approved for uniform application over standard lines between points in that territory, excluding points in the peninsula of Florida, and also a finding that the rules and regulations governing them are not unreasonable or otherwise unlawful. It was also recommended that the commission find undue prejudice and unjust discrimination exist by reason of the intrastate rates in Alabama and Georgia.

St. Louis Package Car Service

The St. Louis Chamber of Commerce, on January 26, celebrated the twenty-second anniversary of the establishment of package car service from St. Louis to various distant points. On January 1, 1907, the principal features of the system, with the schedules of each road handling l. c. l. shipments from St. Louis in through cars sealed to break-bulk points throughout the country, were presented to the public. The system has been developed until at present shippers are given complete monthly information showing preferred routing from St. Louis to every railroad station. The monthly statements showing the exact movement of every package car handled from St. Louis by every railroad during the previous month show that for 1928 the movement to points east of the Mississippi, was 92 per cent on time and to points west of the river, 96 per cent on time. A routing committee, consisting of five traffic managers, representing the commercial interests of the community, meets with the Freight Bureau of the Chamber each week to revise and develop the details of the system.

Lake Cargo Case Argued in Supreme Court

Oral arguments were heard by the Supreme Court of the United States on February 19 in the lake cargo coal rate case, in which the Interstate Commerce Commission and the federal government are appealing from a decision of the district court for the southern district of West Virginia which enjoined the order issued by the commission on February 21, 1928, directing the railroads serving the southern district coal fields to cancel their tariffs which provided for a reduction of 20 cents per ton in the rates for lake cargo coal to the Lake Erie ports. The reduction was proposed to meet a similar reduction ordered by the commission in the rates from the northern district fields of Pennsylvania and Ohio, after the commission had expressed the opinion that the southern rates should not be reduced. The question involved is as to the validity of the commission's order in the circumstances, as the commission did not find that the proposed reduced rates would be unreasonable or unduly discriminatory but that they had not been justified and would create an improper relationship. The original suit for an injunction was brought by the coal operators of the southern district, rather than by the southern railroads, and among the questions argued was that as to their right to maintain the suit. Another question was as to the effect of the Hoch-Smith resolution on the commission's power to issue the order. The railroads serving the northern coal district supported the action taken by the commission.

L. W. Baldwin States Mo. P. Container Position

L. W. Baldwin, president of the Missouri Pacific, has made public a letter he has addressed to Fairman R. Dick of the banking firm of Roosevelt & Son, New York. Mr. Baldwin's letter is by way of reply to a letter addressed by Mr. Dick to directors of all Western railroads in which he deplored the "internecine warfare" of the Western roads on rate matters, referring specfically to the Missouri Pacific container tariff. (*Railway Age*, January 12, page 170). Mr. Baldwin's letter follows:

"I received a copy of your circular letter dated December 29, 1928, addressed to the directors of all Western railroads, in which the action of the Missouri Pacific in filing with the Interstate Commerce Commission what is referred to as a "Container Tariff," is commented on in connection with objections to such tariff by Western Trunk Line roads.

"Recognizing the interest security holders have in carriers' receiving a fair return on property devoted to transportation, and appreciative of the efforts of the Security Holders' Committee for a Fair Return to bring about the condition whereby the carriers would be enabled to earn such fair return, it is felt you are entitled to a reply to the statements contained in your letter, which reply is by way of information to you and to the Security Holders' Committee.

"The third paragraph of your letter is as follows:

> The long continued failure of the western trunk line roads even to approach a fair return is demonstrably due to a depressed rate condition in that section; and this depression of rates is undoubtedly due not alone to the action of regulatory bodies but also to the destructive policies of the roads themselves, and to the lack of harmony which has prevented them from agreeing on a united and adequate rate program.

"I think it is apparent that if such destructive policies and lack of harmony exist, as stated by you and which you infer contribute to a depressed rate condition in western trunk line territory, the action of the Missouri Pacific in filing such container tariff has not been and is not a contributing factor thereto.

"Also, I am not in accord with the statement made in the next and succeeding paragraph of your letter that, This disharmony is revealed in striking fashion by a recent case involving a 'Container Tariff' filed by the Missouri Pacific. The fact that one carrier has, after a continued study of the subject involved, filed a tariff with the Commission, with which tariff other carriers are not in accord, is not in and of itself evidence of disharmony as that word is doubtless used in your letter.

"It is, of course, true that in the summer of 1928 the Missouri Pacific proposed a tariff for shipment of freight in steel containers between St. Louis and other points southwest and west of that city. An essential feature of this tariff is that it bases rates on weight. The proposed tariff was submitted to the western trunk line committee, an organization of tariff officers representing all roads in that territory, and was adversely reported on and opposed by practically all of the carriers represented on said western trunk line committee. However, the objections made by representatives of other carriers to the proposed tariff, including those set out in your letter, had for a considerable time previously been given careful study by the proper officers of the Missouri Pacific and it was not felt that such objections were sound in principle, or that the results presumably feared by such western trunk lines would follow. This position, as before stated, was taken by the Missouri Pacific only after a careful and painstaking study of the subject involved.

"In your letter certain objections on the part of other western trunk line roads are set out, being numbered from 1 to 5, inclusive, and the consideration the Missouri Pacific has given to this matter leads me to answer these objections as follows:

1. The method of handling merchandise in steel containers has been in continuous effect for a number of years on lines operating in Eastern territory and such method has not disrupted, either in whole or in part, the system of classification of freight in that territory. The objection that such method might disrupt the system of classifying freight was urged in Eastern territory by carriers opposed to that method almost to the same extent as made by western trunk lines. During the years that such method has been in effect and under observation in official classification territory, such fears failed to materialize, with the result that a number of the important trunk lines in that territory have since either established similar service on their rails or have formulated plans for so doing on a rather extensive scale in the immediate future. It cannot fairly be assumed that the proposed method will have a different effect on the system of classifying freight in western trunk line territory than in official classification territory.
2. The objection that the rates proposed will necessitate reductions in existing rates not only on less carload but in many instances on carload traffic, is met by the fact that at the hearing before the Commission the Missouri Pacific will submit testimony showing that the rates filed will not necessitate reductions in either less carload or carload traffic. The foregoing leaves out of consideration the fact that less carload traffic handled by the container method produces more net revenue than under the present method, this because the container method is a more economical means of transportation, including elimination of loss and damage claims and a saving in warehouse expense.
3. Forwarding companies as contrasted with individual shippers will not be benefitted by the container tariff to an extent greater than the advantages now accruing to such forwarding companies in their operations under carload class rates. Benefits accruing to either forwarding companies or individual shippers are measured by the volume of traffic available.
4. The contention that the offer of the Missouri Pacific to carry freight on the basis of the container tariff will seriously prejudice the decision of the Interstate Commerce Commission on pending application of western trunk line roads for increases in class rates is answered by the fact that the Commission in its general investigation will consider all phases of the container car service, not only as proposed by the Missouri Pacific, but as maintained by eastern lines. The Commission will not only decide whether or not the container car system is an improved and economical method of handling less carload traffic but will also indicate a reasonable basis of rates for application

thereto, having regard to the earnings to which the carriers are entitled in the several rate territories where the service is at present in operation and where it is proposed to be made effective. Further, the container car rates as now published are predicated on the current class rate scales and if the western roads receive an increase in their class rate scales, the container car rates will be immediately revised to reflect such increase.

5. The answers given to objections numbered 1 to 4, inclusive, will also serve as a reply to objection Number 5.

"The remaining portion of your circular letter has to do with the refusal of the Missouri Pacific to apply for a postponement of the effective date of the original tariff until chief executives of the other carriers concerned could thoroughly investigate and consider the question presented, and also refers to the conclusion of the Commission in the western rate case to the effect that it was the right and duty of the carriers to supply revenue deficiencies by initiating suitable changes in rates.

"As to the alleged failure of the Missouri Pacific to request postponement of the effective date of the tariff filed, it should be stated that the tariff as filed was submitted to the western trunk line committee on July 26, 1928, and was hereafter referred to in a public document issued by such committee bearing date of August 8, following. It therefore appears that at the time this tariff was filed, western trunk lines opposed thereto had been given approximately ninety days in which to meet, confer and otherwise consider what was proposed to be done. In light of that opportunity accorded western trunk lines and in light of the further fact that the tariff was subject to suspension on reasonable and proper request, it was the view of the Missouri Pacific that objections to such tariff should be filed with the Commission to the end that that body might conduct, if it deemed necessary, an orderly and complete investigation. This investigation has now been ordered by the Commission and during the hearing incident thereto it is fair to assume that if the objections now urged have a real basis, such objections will receive the full consideration of the Commission.

"In any event, it should not at this time be assumed that the Commission will permit such container tariff to become effective upon a basis that will bring about conditions such as are expressed in objections contained in your letter and numbered from 1 to 5, inclusive.

"With reference to the conclusion of the Commission in the western rate case, it is apparent that if, at the hearings to be held during the general investigation ordered by the Commission, a showing is made that the proposed container rates constitute a constructive measure and increase the net revenues now derived by the carriers from less carload traffic, the action of the Missouri Pacific in filing this container tariff should not meet with objection on the part of any carrier or security holder. This showing is expected to be made.

"I desire to emphasize the fact that this container tariff to which western trunk line carriers have objected and the propriety of which you as a member of the Security Holders' Committee for a Fair Return have questioned, was published and asked to be permitted to become effective only after an exhaustive and extended investigation into the effects of similar tariffs in eastern territory and after full consideration of the probable effect of such tariff on the revenue of the Missouri Pacific as well as on the rate structure in western territory.

"It is my view, and the view of those in charge of tariff on the Missouri Pacific, that the container method is constructive, economical in operation, will result in increases in the net revenue of the carrier and that the testimony shortly to be taken by the Interstate Commerce Commission will so show. Furthermore, we anticipate it will result in regaining to the carrier certain traffic now being handled by other transportation agencies."

Northwest Seeks Sixty-Hour Trains from Chicago

At a meeting of railroad presidents, mayors and other persons at Portland, Ore., on February 9, the Pacific Northwest appealed to the railroads for a 60-hr. passenger service from Chicago. The action was precipitated by the establishment of a 61¼ hr. service from California to Chicago, and a 63-hr. schedule returning, in contrast to a 68-hr. schedule from Chicago to Seattle, Wash. W. D. B. Dodson, general manager of the Portland Chamber of Commerce, made the request for the 60-hr. service. "We have asked, in the past, for a competitive schedule of time as well as rates. It is impossible for us to conceive any substantial reason why one section of this coast should be given such positive prestige and advantage over another."

Carl Gray, president of the Union Pacific, in reply stated that the northwest was on a parity with California in that both had 68 hr. trains. The faster train used as an example of California's service is an eastbound train with a 63-hr. westbound schedule. It is an all-Pullman train and one that could not be run from the Northwest because of insufficient business. This extra-fare train out of California just pays its way. I doubt that one from the Pacific northwest could even do that."

H. A. Scandrett, president of the Chicago, Milwaukee, St. Paul & Pacific, said that fast service would cost from $750,000 to $1,500,000, a sum which, if possessed, could be spent to better advantage to the Northwest than in operating a fast train. L. C. Gilman, vice-president of the Great Northern, said that California passenger business is four times that of the northwest and gave assurance that an attempt would be made to improve the service to the Northwest.

THE RECENTLY CONSTRUCTED TUNNEL on the Great Indian Peninsular Railway was officially opened on December 16, at Khandala, Bombay Presidency. The project, which was built at a total cost of 6,000,000 rupees ($2,195,400), is one of the largest, and involved realignment of double track line for two-and-one-fourth miles from Khandala station to just below the present reversing station.

Equipment and Supplies

Locomotives

THE TIENTSIN-PUKOW, Tientsin, Hopei, China, is inquiring for 10 Mikado type locomotives.

THE ROYAL STATE RAILWAYS OF SIAM will receive bids until 14 o'clock May 14, at the office of the superintendent of stores at Bangkok, Siam, for six Garrett type locomotives. Specifications and plans may be obtained from Messrs. Sandberg, 25 Broadway, New York.

THE NEVADA CONSOLIDATED COPPER COMPANY has ordered one consolidation type locomotive from the American Locomotive Company.

Freight Cars

THE UNION TANK CAR COMPANY is inquiring for from 300 to 600 tank cars.

THE MISSOURI-KANSAS-TEXAS has ordered 50 hopper cars of 70 tons' capacity from the Standard Steel Car Company.

THE SOUTHERN MANCHURIAN, Dairen, Manchuria, has ordered 30 air dump cars of 35 cu. yd. capacity, from the Magor Car Corporation.

THE CHESAPEAKE & OHIO has ordered 500 ventilated box cars of 40 tons' capacity from the Pressed Steel Car Company. Inquiry for this equipment was reported in the *Railway Age* of February 2.

THE MINNEAPOLIS, ST. PAUL & SAULT STE MARIE has ordered 200 box cars from the Pullman Car & Manufacturing Corporation and 200 cars from the Standard Steel Car Company.

THE ILLINOIS CENTRAL has ordered 25 caboose cars from the American Car & Foundry Company. Inquiry for this equipment was reported in the *Railway Age* of January 26.

CARNEGIE STEEL COMPANY has placed orders for repairs to 70-ton hopper cars as follows: To the Greenville Steel Car Company, 178 cars; Pressed Steel Car Company, 160 cars; American Car & Foundry Company, 160 cars.

THE LEHIGH VALLEY has ordered 200 steel gondola cars of 70 tons' capacity and 500 steel hopper cars of 70 tons' capacity, from the Bethlehem Steel Company. Inquiry for this equipment was reported in the *Railway Age* of December 8.

THE ANDES COPPER MINING COMPANY has ordered 10 flat cars of 40 tons' capacity from the Koppel Industrial Car & Equipment Company. Inquiry for this equipment was reported in the *Railway Age* of February 16.

THE PERE MARQUETTE has ordered 100 Hart selective ballast cars of 50 tons' capacity, from the Rodger Ballast Car Company. Inquiry for this equipment was reported in the *Railway Age* of January 19.

THE ROYAL STATE RAILWAYS OF SIAM will receive bids until 14 o'clock April 16, at the office of the superintendent of stores, at Bangkok, Siam, for the supply of 51 bogie wagons for B. E. 2471. Specifications and plans may be obtained from Messrs. Sandberg, 25 Broadway, New York.

THE NORFOLK & WESTERN has given a contract to the Virginia Bridge & Iron Company for rebuilding 1,000 all-steel hopper cars of the 57½ tons' capacity, the work to be carried out at its Roanoke plant. In the *Railway Age* of January 26, it was reported that the company was asking for prices on this work.

Passenger Cars

THE SOUTHERN PACIFIC has ordered 3 observation cars and 10 lounge cars from the Pullman Car & Manufacturing Corporation. Inquiry for this equipment was reported in the *Railway Age* of January 12.

Iron and Steel

THE ST. LOUIS SOUTHWESTERN is inquiring for 7,500 tons of rail.

Signaling

THE PERE MARQUETTE contemplates the installation of a centralized train control system between St. Joseph, Mich., and New Buffalo, 27 miles, at a cost of about $265,000. No contract has yet been let.

THE NEW YORK CENTRAL has ordered from the General Railway Signal Company, an electric interlocking to be installed at South Bend, Ind. The machine will be Model 5B, with 203 working levers. The order includes 87 switch machines.

THE HOCKING VALLEY has ordered from the Union Switch & Signal Company, a table interlocking, 10 levers, to be installed at the South end of Walbridge yard, Cummings, Ohio. The order includes 14 color-light signals, five switch machines and other material.

THE LEHIGH VALLEY has contracted with the General Railway Signal Company for the installation of an electric interlocking at Oak Island, Newark, N. J.; 41 working levers and seven spare spaces. Position-light signals will be used. This work is to be done in connection with the installation of car retarders at Oak Island, on the contract noted in a previous issue. This road has also ordered a G. R. S. dispatcher type control machine to be used for the remote operation of a crossover at Braders, Pa., where the three-track line merges into double track.

Supply Trade

L. B. Morehead, formerly engaged in the engineering department of the Bettendorf Company, Bettendorf, Iowa, has been appointed chief engineer of the **Davenport Locomotive & Manufacturing Corporation,** with headquarters at Davenport, Iowa.

J. R. Sheppard, chief engineer in charge of the hydraulic machinery department of **R. D. Wood & Company,** Philadelphia, Pa., has severed his connections with that company, having taken a position as sales engineer with the **Birdsboro Steel Foundry & Machine Company,** Birdsboro, Pa.

The Wrought Iron Company of America, with general office and plant at Lebanon and a plant at Scranton, Pa., has opened a branch office at 393 Seventh avenue, New York City. **C. E. Brodhead** is district sales manager at the New York office.

J. T. Stephenson, with office in the Munsey building, Washington, D. C., has severed his connection with James B. Sipe & Company, Inc., Pittsburgh, Pa., and has been appointed sales manager, eastern railway division, of the **Akron Varnish Company,** Akron, Ohio. Mr. Stephenson will continue his other railway sales connections which include the Diamond Rubber Company, the Grip Nut Company, the Logan Iron & Steel Company and the Newport News Shipbuilding & Dry Dock Company.

The Prest-O-Lite Company, Inc., New York, has acquired the business of the Acetylene Products Company which operated two acetylene producing plants located respectively at Phoenix, Ariz., and El Paso, Texas. These plants are now being operated as units of the Prest-O-Lite Company **Everett R. Kirkland** is superintendent of the Phoenix plant, and **Carl F. Chesak** is superintendent of the El Paso plant. **R. G. Daggett,** with headquarters at the San Francisco office, is district superintendent.

C. M. Taylor, vice-president and factory manager of the **Lincoln Electric Company,** Cleveland, Ohio, has been appointed vice-president and sales manager. He graduated from Western Reserve University in 1916 and immediately entered the employ of the Lincoln Electric Company. Shortly thereafter he was made foreman of the assembly and tests departments. In 1917 he enlisted in the United States Army for the duration of the war and spent two years in the United States Air Corp as an aviator. Upon his return to the Lincoln Electric Company after the war, Mr. Taylor was made time study demonstrator and observer. In 1923 he was promoted to factory manager and in 1925 was elected vice-president and factory manager, which position he has held until his recent appointment.

Baldwin Locomotive Works Annual Report

The annual report of the Baldwin Locomotive Works for the year ending December 31, 1928, shows a net profit of $332,211 compared with a 1927 net of $2,442,200 after allowance for taxes. Sales of the year totaled $22,531,349 and with operating expenses of $22,960,832 resulted in a manufacturing loss of $429,482. These figures compare with 1927 sales of $32,901,143, expenses of $30,853,796 and a manufacturing profit of $2,047,347.

Other income and interest during 1928 amounted to $2,044,507 and offset the operating loss to bring, after deductions for accrued interest and a $600,000 allowance for depreciation, the $332,211 net. The 1927 depreciation allowance was $1,000,000.

The company's annual dividend requirements of $2,800,000 have been appropriated from surplus for the past five years. The balance sheet shows that a reserve has been set aside for 1929 dividends. The surplus as of December 31, 1928, stood at $13,109,893 as compared with a surplus of $15,852,059 at the end of 1927.

The 1928 income statement follows with comparisons for 1927:

	1928	1927
Sales	$22,531,349	$32,901,143
Cost	22,960,832	30,853,796
Manufacturing Profit	429,482*	2,047,347
Other Income Interest, etc.	2,044,507	2,337,315
Gross Income	1,615,025	4,384,662
Deduct Accrued Interest, etc.	682,814	679,215
Profit	932,211	3,705,447
Less Depreciation	600,000	1,000,000
Taxes	.....	225,000
Deferred Profits	.....	38,247
		1,263,247
Net Profit	332,211	2,442,200

* Loss.

Trade Publications

DAYLIGHTING AND AIRATION.—The Detroit Steel Products Company, Detroit, Mich., has published a treatise on "The Fenestra Way of Daylighting and Airation", which is designed to show how the lighting and ventilating requirements of almost any proposed building may be analyzed in advance of construction. This treatise is the result of five years work by this company in co-operation with the engineering department of the University of Michigan, and includes a general description of the results and findings of the research undertaken. Some of the topics discussed are: Adequate and uniform illumination, controlling daylight in industrial buildings, window area and window height, sidewall and monitor windows, vertical versus sloping windows, how often should your windows be washed, and monitor windows compared with roof ventilators.

Construction

C. N. R. Plans to Spend 28 Million on Branches

The bills providing for the Canadian National branch line program for the next three years have been given notice and will be introduced in the House of Commons this week. They call for the construction of 17 new branch lines with an aggregate mileage of 701 and an estimated total expenditure of $28,759,000. Of this program the various provinces of the Dominion will be served as follows: Maritime provinces, 77 miles, cost $3,870,000; Ontario, 35 miles, cost $3,385,000; Saskatchewan, 400 miles, cost $14,012,000; Alberta, 148 miles, cost $5,262,000; British Columbia, 41 miles, cost $2,220,000.

Following are the details of the program to be submitted to Parliament:

1. From a point on the Murray Harbor branch to a point on the Georgetown subdivision of the Canadian Government Railways in the province of Prince Edward Island. Estimated mileage, 10; average expenditure per mile, $37,000; estimated cost, $370,000.

2. From Sunnybrae to Guysborough, in the Province of Nova Scotia. Estimated mileage, 67; average expenditure per mile, $52,238; estimated cost, $3,500,000.

3. From a point on the Dundas Subdivision near Brantford to a point on the Dunnville Subdivision near Cainsville, in the Province of Ontario. Estimated mileage, 6.1; average expenditure per mile, $221,311; estimated cost, $1,350,000.

4. From a point on the Garson Branch to the Falconbridge Mine, in the Province of Ontario. Estimated mileage, 4; average expenditure per mile, $46,250; estimated cost, $185,000.

5. From a point on the Sudbury Branch to a point in the Township of Fairbank, in the Province of Ontario. Estimated mileage, 25; average expenditure per mile, $74,000; estimated cost, $1,850,000.

6. From a point near Melfort to a point near Aberdeen, in the Province of Saskatchewan. Estimated mileage, 89; average expenditure per mile, $31,460; estimated cost, $2,800,000.

7. From a point near Central Butte or Mawer to a point in Township 18 or 19, Range 10 or 11, West of the Third Meridian, in the Province of Saskatchewan. Estimated mileage, 50; average expenditure per mile, $36,000; estimated cost, $1,800,000.

8. From Neidpath to a point on the Canadian Pacific Railway near Swift Current, in the Province of Saskatchewan. Estimated mileage, 31; average expenditure per mile, $38,709; estimated cost, $1,200,000.

9. From Ridgedale, in the Province of Saskatchewan, thirty miles towards The Pas, in the Province of Manitoba. Estimated mileage, 30; average expenditure per mile, $36,666; estimated cost, $1,100,000.

10. From a point near Unity to a point near the Provincial Boundary in Township 36 or 37, in the Province of Saskatchewan. Estimated mileage, 50; average expenditure per mile, $35,000; estimated cost, $1,750,000.

11. From a point near Hamlin to a point near Glenbush, Medstead or Robin Hood, in the Province of Saskatchewan. Estimated mileage, 33; average expenditure per mile, $34,848; estimated cost, $1,150,000.

12. From St. Walburg, in the Province of Saskatchewan, to Bonnyville, in the Province of Alberta. Estimated mileage, 117; average expenditure per mile, $36,000; estimated cost, $4,212,000.

13. From Alliance to a point near Youngstown or Dobson, in the Province of Alberta. Estimated mileage, 82; average expenditure per mile, $36,000; estimated cost, $2,952,000.

14. From a point at or near Bulwark to a point in Township 38 or 39, Range 8, West of the Fourth Meridian, in the Province of Alberta. Estimated mileage, 25; average expenditure per mile, $35,000; estimated cost, $875,000.

15. From Hemaruka to Scapa, in the Province of Alberta. Estimated mileage, 41; average expenditure per mile, $35,000; estimated cost, $1,435,000.

16. From a point near Swift Creek to a point near Tete Jaune, in the Province of British Columbia. Estimated mileage, 12; average expenditure per mile, $60,000; estimated cost, $720,000.

17. From New Westminster to a point on Lulu Island, in the Province of British Columbia, with branches therefrom. Estimated mileage, 29; average expenditure per mile, $51,724; estimated cost, $1,500,000.

ABITIBI SOUTHERN.—Construction on this line which will connect Amos, P. Q., in the northern mining area, with Montreal via Mont Laurier and with Ottawa via Maniwaki, will be commenced upon May 1 next. This announcement is made by Clifford T. McAllister, at Montreal, who has arranged for the financing of the construction of the new railway line, which will be 240 miles long and is to cost in the neighborhood of $10,000,000.

BALTIMORE & OHIO.—This company has purchased an entire block of property in New York City on the extreme west side immediately to the south of its Twenty-sixth street yard and warehouse. The property, which contains about 101,000 sq. ft. will be used for team tracks and possibly a new freight house. The purchase was made in the name of the New York Transit & Terminal Company, a subsidiary of the railroad. The work of transforming the property for team track usage will begin in the near future.

CHICAGO & NORTHWESTERN.—This company has applied to the Interstate Commerce Commission for authority to build an extension from Winner to Wood, S. D., 33.7 miles.

PENNSYLVANIA.—A contract has been awarded to the Ogle Construction Company, Chicago, for the construction of a 500-ton four-track reinforced concrete electrically-operated coaling station and a gravity sand handling plant at Red Bank, Pa.

PERE MARQUETTE.—During 1929 this company plans the construction of a new slip, dock and improvements to the existing slips at Ludington, Mich., in connection with the building of two new car ferries for the Lake Michigan service, at a cost of $400,000. Other items included in this year's budget and their cost are: Construction of a four-track viaduct over the tracks of the Michigan Central at Southern avenue, Detroit, Mich., $200,000; construction of a third and fourth main track between Oakman boulevard and Rougemere in Detroit, including interlocking plants and signals, $200,000; construction of additional yard trackage at Detroit, $100,000; construction of extensions and improvements to yard at Wyoming, Mich., $300,000, and to yard at Ludington, $50,000; relocation of main line and extension of passing tracks at New Richmond, Mich., $60,000; construction of second track between East Saugatuck, Mich., and Boyd, $50,000; construction of second track and installation of signals between Holland, Mich., and Waverly and construction of a bridge over the Black river, $40,000; construction of additional yard trackage at Chatham, Ont., $30,000; construction of a coaling and water station at Lake, Mich., $50,000; and construction of a coaling station at St. Thomas, Ont., $10,000.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Readjustment of Orient Capitalization.*—This company has applied to the Interstate Commerce Commission for authority to acquire control directly of the Kansas City, Mexico & Orient of Texas by acquisition of 9,991 shares of its stock and $9,116,623 of its first mortgage bonds from the Kansas City, Mexico & Orient, control of which was recently acquired by the Atchison by purchase of 35,000 shares of no-par stock. The application states that the Atchison's investment in the Orient properties is $14,507,500 paid for the stock and $2,500,000 advanced to pay off the latter's government loan, for which it will have after the capitalization of the Orient and the Texas company is readjusted, $16,000,000 par value of their securities, of which $9,500,000 will be in stock and $6,500,000 in bonds.

BALTIMORE & OHIO.—*Denied Authority to acquire Curtis Bay.*—The Interstate Commerce Commission has denied the application of this company to acquire control of the Curtis Bay Railroad by purchase of capital stock and to operate the property under contract. The denial is based upon the finding that the Curtis Bay is not a common carrier within the meaning of paragraph 2 of section 5 of the Interstate Commerce Act.

BELT RAILWAY OF CHICAGO.—*Trackage Rights.*—This company has applied to the Interstate Commerce Commission for authority to extend its service in the Chicago district by operating over tracks of the Baltimore & Ohio Chicago Terminal and the Indiana Harbor Belt between Argo and Proviso.

CANADIAN NATIONAL.—*Financial Structure.*—In the annual report of the Department of Railways and Canals, tabled in the House of Commons at Ottawa, the following remarks about the financial structure of the Canadian National System are made by the Deputy Minister, bearing on possible reorganization of the financial structure. These remarks follow in part:

Reference was made in a previous paragraph to the rapidly mounting item of interest due the government which, appearing as a deficit, also appears as an addition to the obligations of the railways under Dominion of Canada account. This interest is not compounded, but the item grows quickly, the yearly accrual now being more than double that of a decade ago. This item had accumulated to $226,142,005.41 at December 31 last, and by the end of the current year will have passed the quarter billion mark. This matter of unpaid interest, therefore, becomes of increasing importance with each succeeding year. In the early stages of the financial complications of the railways this situation was dealt with for the time being by the expedient of adding the item to the debt of the railway to the government. This procedure was somewhat in the nature of a promissory note. However, the obligation has reached such proportions as to call for early consideration on the part of both the railway management and the government. The government loaned to certain railways large sums which became a charge on the physical properties of the companies. It also guaranteed many bond issues on which private moneys were raised. To that extent the government backed the notes of the railways. Finally, as chief creditor and principal endorser, the government found it necessary to take over the lines in order to protect its position and the interests of the Canadian public dependent upon the railways. In ordinary business, that would have

ended any question of further interest on the loans, the properties being accepted in satisfaction of claims.

Owing, however, to bookkeeping requirements and the necessity to preserve an absolute statement of corporate financing and the government's part therein, the record of these obligations was continued after the government took control, and from year to year was augmented as fresh financial requirements had to be met. In this way, the old obligations were, from the standpoint of record, merged with the newer, until to-day the railways are carrying not only the financial load that proved too much for private ownership, but the additional financing of the intervening years since reorganization.

Had the affairs of the railways been liquidated by court process when the roads went under, financial reorganization would have taken place at that time, and the problem would, to that extent, have been less complicated. The taking over by the government of the railways as going concerns when they were virtually insolvent, and the necessity to deal first with more insistent questions connected with the co-ordination of the physical properties and the reorganization of their management, postponed for a time the possibility of giving effective consideration to the position of the financial structure, which consideration now becomes a matter of prime importance.

The $562,490,349.30 represented by the cash loans to the railways—and here we are not discussing the nine-year period only, but loans dating back to 1911—did not all go to meet operating and income deficits. Of the foregoing sum, $245,341,700.36 went to meet such deficits, largely in the earlier years following the taking over of the roads. The remainder of the loans were used for the following purposes: Redemption of debt to the public, $86,605,038.54; investment in road and equipment, $202,014,616.74; working capital, $28,528,993.66. From this it will be seen that a considerable sum went to the retirement of the debt to the public. That decreased to the extent of eighty-six million dollars the stake of the investing public in the railways, and increased to the same extent the interest of the government. At the same time, more than two hundred millions of government money went into investment in road and equipment. There would seem to be no reason why those sums should be regarded as other than an investment capable of eventual return.

The analysis and review of the results of nine years of government operation and control of the National lines—six of which years are to the credit of the present management—discloses substantial improvement in every conceivable direction. The property has grown greatly in value and importance. Its mileage has been extended into potentially valuable territory. Its rolling stock and motive power have kept pace with the requirements of increasing traffic and more ardent competition. So much for the physical side. On the financial side, operating deficits have given place to surplusses that may now be expected to take care of the interest charges of the public investors and provide something for other requirements. The net deficit after fixed charges is now largely a matter of interest due the government on loans to properties it now owns, loans definitely indicated as "non-active" in the Dominion Public Accounts, but remaining active on the books of the railways. In that connection, it may be remarked that interest on appropriations connected with the original government lines has never been accrued. Those railways were regarded as public works and the moneys provided from consolidated revenues.

New capital requirements of the national lines tend to grow less, and there being no longer necessity to provide for operating deficits, and the railways having reached the point where they may be expected to provide their own interest charges to the investing public, such new funds as are required go either into refunding or to the betterment and extension of the property. Without desire to deal extravagantly with the situation, nor to make invidious comparison with private ownership and operation, so successfully demonstrated in competition with Canadian National lines, it is nevertheless a satisfaction to be able to point to such substantial improvement in a situation which, a short ten years ago, was admittedly a matter of grave national concern. The present financial structure must be brought into line with the changed situation as affecting the properties. It is understood that the management has for some time been making a very careful study of all the considerations involved and that before long definite recommendations may be looked for. Once the financial structure has had attention it is felt that the Canadian National lines may look forward with confidence to even greater progress and freer and untrammelled usefulness to the public it seeks to serve.

CANADIAN PACIFIC. — *New Director.*—Sir Charles Gordon, G. B. E., president of the Bank of Montreal, has been appointed a director of the Canadian Pacific, succeeding J. K. L. Ross, resigned. F. L. Beique has been appointed a member of the executive committee of the board of directors.

CENTRAL VERMONT. — *Reorganization.*—All of the property of the Central Vermont Railway Company of "every name and nature including all branch lines will be transferred to the new corporation at the close of the existing receivership" a statement issued by the railway says. The statement further says that "the new corporation will be subject to the same law in respect of the operation of the branch lines which governed the Central Vermont Railway Co. before receivership." The statement issues say that this assurance is given because some fear has been expressed lest, in the reorganization of the Central Vermont Railway Company, resulting from the receivership, all the property and leasehold interests of the Central Vermont Railway Co. will not be transferred to the new Vermont corporation that is proposed.

CHICAGO, ROCK ISLAND & PACIFIC.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $1,000,000 of general mortgage bonds to be delivered to the corporate trustee under its first and refunding mortgage and to procure the authentication and delivery of an additional $1,000,000 of first and refunding bonds—all in reimbursement of capital expenditures.

COLUMBUS & GREENVILLE.—*New Director.*—G. T. Lee of Carrollton, Miss., has been elected a director to succeed J. S. Sexton of Hazelhurst, Miss., deceased.

DETROIT, TOLEDO & IRONTON.—*Minority Stockholders Object.*—Minority stockholders of the Detroit, Toledo & Ironton have filed with the Interstate Commerce Commission a brief in opposition to the application of the D. T. & I., for authority to acquire control of the Detroit & Ironton, including the property of the Ford Transportation Company, under an operating license. They urge the absorption of the D. & I. by the acquisition of its assets by the D. T. & I., or by a bona fide lease to the D. T. & I.

DULUTH, MISSABE & NORTHERN.—*New Director.*—E. H. Dresser, chief engineer of the D. M. & N. has been elected a director to succeed J. W. Kreitter, who recently retired from active service as superintendent.

HOUSTON NAVIGATION DISTRICT.—*Trackage Rights.*—The Interstate Commerce Commission has authorized the Texas & New Orleans, the International Great Northern, the St. Louis, Brownsville & Mexico, the Beaumont, Sour Lake & Western, the Gulf, Colorado & Santa Fe, the Missouri-Kansas-Texas, and the Trinity & Brazos Valley to operate over the terminal tracks owned by or leased to the Harris County-Houston Ship Channel Navigation District in and near Houston, Tex. Authority to acquire control over these lines under paragraph 2 of section 5 of the Interstate Commerce Act has been denied.

KANSAS CITY, MEXICO & ORIENT.—*Securities.*—This company has applied to the Interstate Commerce Commission for authority to issue a 6 per cent first mortgage bond for $2,500,000 to the Atchison, Topeka & Santa Fe in satisfaction of the amount advanced to pay the indebtedness of the Orient to the federal government, and also 55,000 shares of common stock of a par value of $100 a share to be delivered to the Atchison, together with $9,116,633 of first mortgage 30-year 4 per cent bonds of the Kansas City, Mexico & Orient of Texas and 9,991 shares of stock of the Texas company, in exchange for 35,000 shares of no-par stock of the Orient, which the Atchison recently purchased.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE. — *Stock.* — The Interstate Commerce Commission has authorized this company to issue 164 shares of its 4 per cent leased line stock certificates in exchange for an equal amount of outstanding preferred shares of the Wisconsin Central.

MISSOURI PACIFIC.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Missouri-Illinois, which operates 136 miles of line in Missouri and Illinois, by acquiring 51 per cent of the capital stock for $1,250,000 in cash. The Missouri-Illinois has also applied for authority to acquire control by purchase of stock and by lease of the Missouri River & Bonne Terre, which has a line of 46 miles from Riverside to Doe Run, Mo., and 16 miles of branch line, and for authority to issue $3,500,000 of first mortgage 5 per cent bonds to be sold to Dillon, Read & Co., at 95 and interest. The St. Joseph Lead Company owns approximately two-sevenths of the stock of the Missouri-Illinois and substantially all of the stock of the Bonne Terre.

NEW YORK, NEW HAVEN & HARTFORD.—*Ferry Abandonment.* — The Interstate Commerce Commission has authorized this company to abandon a passenger ferry service between New Bedford, Mass., and Fairhaven, the authority subject to the restriction that the road must furnish suitable motor transportation for through-ticketed passengers changing from the New England Steamship pier at New Bedford to trains at Fairhaven, or vice versa.

NORTHWESTERN PACIFIC.—*Abandonment of Narrow-Gage Line.*—The Interstate Commerce Commission has authorized this company to abandon a 36-mile narrow-gage branch between Point Reyes, Calif., and Monte Rio.

READING. — *Abandonment.* — The Interstate Commerce Commission has authorized this company to abandon its 0.6-mile Mt. Hope Colliery branch in Schuylkill County, Pa.

TERMINAL RAILROAD ASSOCIATION OF ST. LOUIS.—*Bonds.*—This Company has applied to the Interstate Commerce Commission for authority to issue $7,000,000 of refunding and improvement 4½ per cent bonds, for the purpose of reimbursing its treasury for expenditures for additions and betterments.

(*Continued on page 486*)

Annual Report

Forty-fourth Annual Report of the Buffalo, Rochester & Pittsburgh Railway Company, for Year Ending December 31st, 1928

The Directors of the Buffalo, Rochester and Pittsburgh Railway Company submit to the stockholders the following report for the year ended December 31. 1928.

Road Operated

	1928 Miles	1927 Miles	Decrease
Owned	369.71	369.71	
Leased	102.25	102.25	
Trackage rights	130.01	130.01	
Total length of road operated	601.97	601.97	
Second track	211.88	211.88	
Sidings	458.82	460.20	1.38
Total miles of all tracks, all steel rails	1,272.67	1,274.05	1.38

There was no change in the mileage of road operated. Sidings decreased 1.38 miles.

Income

	1928	1927	Increase	Decrease
Operating Income				
Revenues	$16,966,503.60	$17,522,080.65		$555,577.05
Expenses	13,848,358.81	15,485,429.68		1,637,070.87
Net revenue	$3,118,144.79	$2,036,650.97	$1,081,493.82	
Tax accruals	$500,000.00	$336,000.00	$164,000.00	
Uncollectible revenues	1,433.87	597.02	836.85	
	$501,433.87	$336,597.02	$164,836.85	
Total operating income	$2,616,710.92	$1,700,053.95	$916,656.97	
Non-operating income	807,411.92	841.008.10		$33,596.18
Gross income	$3,424,122.84	$2,541,062.05	$883,060.79	
Deductions for interest, rentals, etc.	2,565,650.06	2,539,784.78	25,865.28	
Net income — surplus available for dividends	$858,472.78	$1,277.27	$857,195.51	
Return on capital stock	5.20%	0.01%	5.19%	

Taxes advanced 48.81% to $500,000, due to the Federal Income Tax on the larger Net Income.

In Non-operating Income a decrease of $77,443.80 in hire of freight car, rentals, dividends, etc., was partially offset by an increase of $43,847.62 in Income from securities, loans and accounts, making the total net decrease $33,596.18.

The interest charges for an entire year on bonds sold in June, 1927 was the principal cause for the increase of $25,865.28 in Deductions from Net Income.

The net results show an increase of $857,195.51 in Net Income compared with the preceding year, and is equal to 5.20 per cent. on both classes of stock.

Dividends

Dividends, out of the accumulated surplus in Profit and Loss Account, were paid in cash on:

			1928		1927
Preferred stock	$6,000,000	6%	$360,000	6%	$360,000
Common stock	10,500,000	4%	420,000	4%	420,000
Total	$16,500,000		$780,000		$780,000

Since the close of the fiscal year your Board of Directors has declared a semi-annual dividend of three per cent. on the preferred stock and two per cent. on the common stock, payable February 15th, 1929.

Capital Stock

There has been no change during the year in this account. The total outstanding capital stock of the Company amounts to $16,500,000, and consists of $6,000,000 preferred stock and of $10,500,000 common stock.

Funded Debt

The following bonds were retired during the year:

Equipment agreement	Series G	$177,000
"	H	125,000
"	J	100,000
"	K	80,000
"	L	128,000
"	10	133,600
Total		$743,600

The non-negotiable debt of $7,335.09 due the Avonmore & Northern Railway Company was closed by the dissolution of the corporation on December 3, 1928, and the loss on the stock investment charged to Profit and Loss account.

The net result is a decrease of $750,935.09 in the funded debt of your Company.

Cost of Road

Capital account was charged during the year with $274,215.98 for investment in road and general expenditures, as follows:

Land at various points	$10,169.42
Elimination of grade crossing, Silver Lake Jct., N. Y.	7,489.39
Elimination of grade crossing, Home, Pa.	15,855.31
Additional sidings, Wheatland, N. Y.	2,654.54
Additional sidings at other points	6,831.22
Yard tracks, Johnsonburg, Pa.	23,877.00
Automatic flash light signals, various points	10,376.21
Water station, Gainesville, N. Y.	13,900.91
Improvements, Y.M.C.A., Elk Run Junction, Pa.	11,078.75
New station, Freedom, N. Y.	3,456.20
Improving culverts, bridges and road bed drainage	24,267.91
Increased weight of rail	84,788.05
Increased ballast	27,229.84
Shop machinery	3,783.13
Miscellaneous	28,458.10
Total	$274,215.98

Approximately $11,345.00 additional expenditures for work authorized will be required to complete all the construction undertaken during the year.

Cost of Equipment

Expenditures were made for additions to equipment as follows:

One company's service car and five miscellaneous equipment cars purchased	$7,570.57
Sundry betterments, including reclassification of five freight train cars	73,924.79
	$81,495.36

There was credited for equipment sold, transferred or destroyed, the following book values:

Six locomotives	$88,084.43	
One passenger train car	5,324.79	
Eight hundred twenty-two freight train cars	653,122.48	
Twenty-two company's service cars	8,462.87	
Two miscellaneous equipment	1,244.50	756,239.07
Making a net credit of		$674,743.71

Six of the lighter type locomotives were sold during the year. In addition six hundred thirty-three freight cars and two miscellaneous equipment cars were sold.

The rolling stock statistics are affected as follows:

The total tractive power of engines now aggregates 14,116,740 pounds, a decrease of 237,839 pounds during the year.

The average tractive power of each engine increased 419 pounds being 50,963 pounds as against 50,544 pounds a year ago.

The total carrying capacity of cars in freight service now amounts to 565,865 net tons, a decrease of 38,563 net tons.

The average carrying capacity or efficiency of each freight car increased .53 net tons, being 46.85 tons as against 46.32 tons last year.

Of the cars in passenger service 61.22 per cent. are of all steel construction, and in the freight service 99.51 per cent. of the cars are all steel, or are equipped with steel underframes.

The following table represents the relative changes in equipment for the past ten years:

	Tractive power of engines in pounds		Capacity of cars in freight service in tons of 2000 pounds	
	Average of each engine	Aggregate tractive power	Average of each car	Aggregate capacity
1919	44,100	15,346,830	43.97	771,541
1920	45,630	14,281,845	44.12	748,215
1921	46,400	13,688,103	44.20	737,255
1922	46,630	13,522,696	44.37	727,382
1923	49,700	14,810,676	44.63	705,525
1924	49,886	14,716,267	44.91	692,450
1925	49,958	14,637,809	44.96	681,690
1926	50,143	14,541,582	45.52	637,922
1927	50,544	14,354,579	46.32	604,428
1928	50,963	14,116,740	46.85	565,865
Increase over 1919	6.863	*1,230,090	2.88	*205,676
Per cent	15.56	* 8.02	6.55	* 26.67

* Decrease.

[Advertisement]

Leased Lines

The following advances were made this year for additions and betterments to leased lines:

	Allegheny & Western Railway	Clearfield & Mahoning Railway	Mahoning Valley Railroad	Total
Improvements on leased railway property	$79,511.13	$20,956.36	$985.33	$101,452.82
Less retirements	129,351.99	10,811.97	371.08	140,535.04
Net Credit		$10,144.39	$614.25	
Net Debit	$49,840.86			$39,082.22

The total net credit to date for advances to leased lines is as follows:

Allegheny & Western Railway and Allegheny Terminal Company	$906,610.33	
Clearfield & Mahoning Railway	426,639.91	
	$1,333,250.24	
Less Mahoning Valley Railroad	183,805.76	
Total net advances		$1,149,444.48

Passenger Revenues

The gross passenger revenue amounted to $920,264.22, a decrease of $164,874.15 or 15.19 per cent. compared with 1927. The continued diversion of traffic to motor coaches and privately owned automobiles were the chief factors contributing to this unfavorable result.

The average rate received per passenger per mile decreased .024 cent, being 2.953 cents as compared with 2.977 cents the preceding year.

The average distance each passenger was carried decreased .9 mile, being 36.7 miles against 37.6 miles.

Passengers carried in 1928	848,386	
Passengers carried in 1927	970,205	
A decrease of 12.56 per cent., or		121,819
Passengers carried one mile in 1928	31,166,188	
Passengers carried one mile in 1927	36,452,021	
A decrease of 14.50 per cent., or		5,285,833

Freight Revenue

The gross freight revenue amounted to $15,459,925.54, a decrease of 2.16 per cent., or $340,826.96 compared with 1927.

The average rate received per ton mile decreased .007 cent, being .864 cent compared with .871 cent for the same period in 1927.

The average distance each ton was hauled increased .96 mile, being 157.95 miles, against 156.99 miles last year.

The bituminous coal tonnage decreased 309,577 tons, while coke, iron ore, pig iron and other freight increased 87,654 tons.

The revenue tonnage moved was as follows:

	1928	1927	Increase	Decrease
Bituminous coal	6,202,407	6,511,924		309,517
Coke	150,493	121,434	29,059	
Iron ore	24,279	492	23,787	
Pig iron	58,469	114,079		55,610
Other freight	4,893,467	4,803,049	90,418	
Total	11,329,115	11,550,978		
A decrease of 1.92 per cent., or				221,863
Tons moved one mile in 1928				1,789,444,512
Tons moved one mile in 1927				1,813,434,150
A decrease of 1.32 per cent., or				23,989,638

The average number of revenue tons carried one mile per revenue freight train mile, excluding the mileage of helping engines, increased 31.04 tons, being 809.56 tons against 778.52 tons a year ago.

The averages for the past ten years are as follows:

	Train load	Engine load
1919	884	586
1920	943	602
1921	754	520
1922	790	534
1923	850	554
1924	736	515
1925	756	523
1926	824	555
1927	779	535
1928	810	542

The non-revenue freight traffic, not included in any other figures of this report, is as follows:

	1928	1927
Number of tons	895,185	956,506
Number of tons carried one mile	83,153,922	90,561,009

Operating Expenses

Operating expenses decreased $1,637,070.87 or 10.6 per cent., as follows:

	Increase	Decrease	Per cent.
Maintenance of way		$139,928.52	6.1
Maintenance of equipment		1,237,484.86	21.9
Traffic	$2,971.89		0.8
Transportation		240,698.66	3.6
Miscellaneous operations		826.27	2.6
General		26,434.89	5.0
Transportation for investment—Cr.	5,330.44		21.8
Total		$1,637,070.87	10.6

The larger maintenance program during 1927 compared with this year accounts for the decrease of expenses in Maintenance of Way and Maintenance of Equipment. The principal reductions are in repairs of structures, telegraph lines, rolling stock and the retirement of unserviceable cars.

The decrease in Transportation expenses is due to a decline of 1.92 per cent in volume of business handled, and to economies in operation.

A reduction in valuation expenses was the main item contributing to the decrease in General expenses.

The operating ratio is 81.62%, a decrease of 6.76% from the preceding year.

The percentage of each group of operating expenses to operating revenues, for the past seven years, is as follows:

	1928	1927	1926	1925	1924	1923	1922
Maintenance of way	12.60	13.00	12.25	12.68	10.74	17.77	14.28
Maintenance of equipment	26.01	32.24	28.52	27.34	29.36	32.14	38.85
Traffic	2.12	2.04	1.86	1.97	1.93	1.40	1.42
Transportation	37.84	38.02	34.99	37.62	39.12	38.29	40.07
Miscellaneous operations	.18	.18	.16	.18	.18	.15	.17
General	2.98	3.04	2.93	2.98	3.07	2.33	2.83
Transp. for Inv.—Cr.	.11	.14	.10	.10	.08	.48	.09
	81.62	88.38	80.61	82.67	84.32	91.60	97.53

The average cost per ton mile is .659 cent, a decrease of .076 cent compared with last year.

Pensions

The pension system was inaugurated on July 1, 1903. At present the total number of pensioners on the rolls is 136, and the pensions paid during the year amounted to $89,322.38, an increase of 14 pensioners, and an increase of $6,697.45 in the payment made, compared with 1927.

The statistics for the past five years are as follows:

	1928	1927	1926	1925	1924
Total number enrolled	316	287	270	250	236
Number decreased or discontinued	180	165	147	132	117
Number on roll	136	122	123	118	119
Amount paid	$89,322.38	$82,624.93	$78,601.57	$76,962.04	$71,977.67

General Remarks

As stated in previous Annual Report your Company filed a protest against the Tentative Valuation of $59,422,709 fixed by the Interstate Commerce Commission as of June 30, 1917. Proof of the inadequacy of this valuation was offered by your Company but no final decision has been published by the Commission.

The cost of valuation work to date has reached $398,517.00, of which $69,005.26 was assumed by the U. S. Railroad Administration.

The Ontario Car Ferry Company, Limited, paid a dividend of 10% for the year ending December 31st, 1927. The sum of $25,000 received on the $250,000 of this Company's stock was credited to Non-operating Income account.

The dividends paid by the Water Companies out of the earnings of 1928, as follows:

Ketner Water Company	$92,000 stock @ 9%	$8,280.00
Kyle Water Company	85,000 " " 11%	9,350.00
Cloe Water Company	55,000 " " 9%	4,950.00
Cummings Water Company	60,000 " " 4%	2,400.00
Total		$24,980.00

were also credited to the same account.

The acknowledgments of the Board are renewed to its officers and loyal employees for their faithful and efficient service.

By order of the Board,

WILLIAM T. NOONAN,
President.

Rochester, N. Y., February 4th, 1929.

[ADVERTISEMENT]

Financial News

(*Continued from page 483*)

WABASH.—*Equipment Trust Certificates.*—Edward Lowber Stokes & Co. is offering $3,375,000 of 4½ per cent equipment trust certificates of this company, series H, maturing annually to 1944 at a price to yield 4.85 per cent, the issue subject to the approval of the Interstate Commerce Commission.

WHEELING & LAKE ERIE.—*Cleveland Station.*—An injunction suit filed by a minority stockholder of the Wheeling & Lake Erie representing the Taplin interests seeking to restrain that railroad from abandoning its passenger station at Ontario street, Cleveland, Ohio, from temporarily using the Erie passenger station, from selling the abandoned site to the Cleveland Union Terminal Company, and from eventually using the Union Terminal facilities was dismissed in the United States district court at Cleveland on February 18, by Judge Paul Jones. The injunction petition declared $7,500,000 to be a fair price for land which directors of the W. & L. E. had taken an option to sell to the Terminal Company for $1,600,000. It was also charged that the $20,000 annual rental which the W. & L. E. has contracted to pay for facilities in the Union Terminal for the next 25 years is much less than the railroad would expend to maintain its own station.

Average Prices of Stocks and of Bonds

	Feb. 19	Last week	Last year
Average price of 20 representative railway stocks.	131.48	133.65	115.70
Average price of 20 representative railway bonds	91.37	91.53	96.82

Dividends Declared

Boston & Maine.—First Preferred A (unstamped), $21.50; First Preferred B, (unstamped), $34.40; First Preferred C (unstamped), $30.10; First Preferred D (unstamped), $43.00; First Preferred E (unstamped) $19.35, all payable February 28 to holders of record February 15.

Canadian Pacific.—Common, 2½ per cent, quarterly; Preferred, 2 per cent, both payable April 1 to holders of record March 1.

Chesapeake & Ohio.—Common, 2½ per cent, quarterly, Preferred, 3¼ per cent, both payable July 1 to holders of record June 8.

Chesapeake Corporation.—Common, $.75, quarterly, payable April 1 to holders of record March 8.

Cleveland & Pittsburgh.—Guaranteed, $.87½, quarterly; Special Guaranteed, $.50, quarterly, both payable March 1 to holders of record February 9.

North Pennsylvania.—$1.00, quarterly, payable February 25 to holders of record February 18.

Union Pacific.—Common, 2½ per cent, quarterly; Preferred, 2 per cent, both payable April 1 to holders of record March 1.

FREIGHT SHIPMENTS may now be made without trans-shipment from Hungary to England by the train ferry service from Zeebrugge to Harwick in cars of 15 tons' capacity reserved for this purpose by the Hungarian State Railways. All goods may be sent this way with the exception of those which are likely to soil the cars, such as unpacked lard, lime, petroleum, artificial fertilizers, etc. Cars must be ordered at least six days before transit is to take place, and an advance payment as a deposit is required. In other respects the regulations of the International Convention of Berne of October 23, 1924, will be observed.

Officers

Executive

A. H. Stone has been elected vice-president of the Columbus & Greenville, with headquarters at Columbus, Miss.

R. J. Cullen has been elected president of the Mississippi Export, with headquarters at Moss Point, Miss., succeeding **A. F. Dantzler,** who has been elected vice-president, with headquarters at the same point. **J. H. Allen** has been elected vice-president, with headquarters at Mobile, Ala.

Financial, Legal and Accounting

H. C. Baird has been appointed assistant auditor of the Georgia & Florida, with headquarters at Augusta, Ga.

C. C. Handy has been appointed general attorney of the New York Central, with headquarters at Cleveland, Ohio.

R. E. Currie has been appointed auditor of valuation of the Southern Pacific, with headquarters at San Francisco, Cal.

C. D. Pantle, general accountant of the Missouri-Kansas-Texas, has been promoted to assistant auditor, with headquarters as before at St. Louis, Mo.

R. C. Griffith, assistant land and industrial commissioner of the Texas & Pacific, has been promoted to land and industrial commissioner, with headquarters as before, at Dallas, Tex.

A. C. Armstrong, general auditor of the Illinois Terminal System, has been appointed assistant comptroller, with headquarters as before at St. Louis, Mo., and the position of general auditor has been abolished. **P. M. Gervig,** auditor of the steam lines has been appointed auditor of the System, with headquarters as before at Alton, Ill. The positions of auditor of disbursements, auditor of freight accounts and auditor of passenger accounts have been abolished and the duties consolidated with the position of auditor.

Alistair Fraser, commission counsel of the Canadian National, with headquarters at Montreal, Que., has been appointed assistant general counsel of the System, with the same headquarters. Mr. Fraser was born at New Glasgow, N. S. He was admitted to the Bar in 1911 and in 1921 he was appointed King's Counsel. During the World War he served with the 17th Battalion, the Princess Patricia's Canadian Light Infantry, and the 15th Battalion. In 1919 he was appointed general solicitor for the Canadian National and in 1923 he was appointed commission counsel, which position he held at the time of his recent promotion. Mr. Fraser will continue to deal with Commission matters.

Lindell O. Todd, assistant auditor of the Georgia & Florida, with headquarters at Augusta, Ga., has been elected auditor, with the same headquarters. He was previously elected assistant secretary. Mr. Todd was born in Laurens, S. C., on August 29, 1897. He was educated at the Academy of Richmond County, Augusta, Ga., and entered railroad service in November, 1917, as clerk in the accounting department of the

Lindell O. Todd

Georgia & Florida. He was promoted to the position of assistant bookkeeper in June, 1918, and in October of the following year he was appointed chief clerk to the superintendent of motive power at Douglas, Ga. He served in that capacity until March, 1920, when he became division accountant. Mr. Todd was appointed assistant auditor in November 1, 1923, which position he held until his recent appointment to the positions of auditor and assistant secretary.

Operating

Petrus Pearson has been appointed general manager of the Port Angeles Western, with headquarters at Port Angeles, Wash.

A. O. Liddon, formerly a traveling freight agent for the Atlantic Coast Line, has been appointed general manager of the Alabama, Florida & Gulf, with headquarters at Dothan, Fla.

E. A. Teed, assistant superintendent on the St. Louis-San Francisco at Chaffee, Mo., has been promoted to superintendent of terminals at Birmingham, Ala., succeeding **J. W. Skaggs** who has been transferred to Kansas City, Mo. Mr. Skaggs replaces **J. M. Flanigan,** who retired from active service on February 15.

J. A. MacGregor, superintendent of the Portage division of the Manitoba district of the Canadian Pacific, with headquarters at Winnipeg, Man., has been

transferred to the Saskatoon division of the Saskatchewan district, with headquarters at Saskatoon, Sask., succeeding **J. M. McKay,** who has been appointed general agricultural agent of the Western lines, with headquarters at Winnipeg. Mr. McKay replaces **Thomas S. Acheson,** who resigned on February 14. **W. E. Kingston,** assistant superintendent at Winnipeg, has been promoted to superintendent of the Portage division, succeeding Mr. MacGregor.

R. B. Lally, yardmaster on the Erie & Ashtabula division of the Pennsylvania, has been appointed acting assistant trainmaster on the Akron division. **C. E. Brown,** general yardmaster on the Alleghany division at Oil City, Pa., has been promoted to assistant trainmaster on the same division, succeeding **F. C. Wilkinson,** who has been transferred to the Buffalo division at Olean, N. Y. Mr. Wilkinson replaces **H. A. Derr,** who has been appointed movement supervisor on the Buffalo division. **D. M. Donachey,** general yardmaster on the Pittsburgh division, has been promoted to assistant trainmaster on the Wheeling division, succeeding **J. M. Reed,** who has been transferred to the Eastern division. Mr. Reed replaces **C. L. Sheets,** who has been transferred to the Pittsburgh division, where he succeeds **E. S. McCormick,** who has been transferred to Cleveland division. **Mr. F. Lewis,** who Mr. McCormick succeeds as assistant trainmaster on the Cleveland division, has been transferred to the Pittsburgh division.

C. F. Dougherty, assistant superintendent on the Louisiana division of the Missouri Pacific, with headquarters at El Dorado, Ark., has been promoted to superintendent of that division, with headquarters at Monroe, La. Mr. Dougherty succeeds **W. E. Lamb,** who has been transferred to the Arkansas division, with headquarters at Little Rock, Ark., replacing **A. R. Taylor,** who has been appointed inspector of transportation with headquarters at St. Louis, Mo. **E. B. Stevenson,** trainmaster on Little Rock division, with headquarters at McGehee, Ark., has been promoted to assistant superintendent of the Louisiana division succeeding Mr. Dougherty. **R. C. Wildeboor** has been appointed assistant trainmaster on the Central Kansas division, with headquarters at Asawatomie, Kan., succeeding **M. F. McKnight,** who has been promoted to trainmaster on the Little Rock division, replacing Mr. Stevenson. The jurisdiction of **B. W. Moore,** trainmaster on the Little Rock division, with headquarters at McGehee, has been extended to include the Benton, Pine Bluff, McGehee and Warren districts.

H. O. Kelley, who has been appointed superintendent of the Springfield division of the Wabash, with headquarters at Springfield, Ill., graduated from Rose Polytechnic Institute in 1913 and obtained a civil engineering degree from the same college in 1926. He entered railway service in June, 1913, as a rod man on the Chicago & Eastern Illinois at Evansville, Ind., then acting in various capacities in the engineering corps of the Evansville and Illinois divisions of that railroad until March, 1916, when he was appointed maintenance engineer of the Evansville & Indianapolis (now part of the Cleveland, Cincinnati, Chicago & St. Louis) at Evansville. In June, 1918, Mr. Kelley was appointed assistant engineer on the Wabash at St. Louis, Mo., being promoted to division engineer of the St. Louis Terminal divi-

H. O. Kelley

sion in December, 1919. During 1920 and 1921 he served as special engineer of the Wabash and in September of the latter year he was appointed division engineer of the Western division at Moberly, Mo. In October, 1923, he was transferred to the Peru division at Peru, Ind., and in August of the following year he was appointed general manager of the Toledo & Western, with headquarters at Sylvania, Ohio. Mr. Kelley's appointment as superintendent of the Springfield division of the Wabash became effective on February 1.

Traffic

S. L. Bedford has been appointed general agent of the St. Louis, San Francisco & Texas at Paris, Tex.

Paul A. True, general agent of the Peoria & Pekin Union at Cincinnati, Ohio, has been transferred to Indianapolis, Ind.

W. M. Hipp, passenger representative of the Missouri Pacific at Mexico City, D. F., has been promoted to general agent at that point.

Carl B. James, agricultural agent on the Louisville & Nashville at Montgomery, Ala., has been promoted to general immigration and industrial agent, with headquarters at Louisville, Ky., succeeding **G. A. Park,** deceased.

C. S. Edmonds, formerly traffic manager of the Oklahoma Railway at Oklahoma City, Okla., has been appointed assistant general freight agent of the Fort Worth & Denver City and the Wichita Valley, with headquarters at Fort Worth, Tex.

W. A. Shook, traveling freight and passenger agent for the Union Pacific at Fresno, Cal., has been appointed general agent at Santa Ana, Cal., succeeding **R. E. Drummy,** who has been transferred to Riverside, Cal., to succeed **J. V. Carroll,** who has resigned.

George B. Rice, assistant freight traffic manager of the Seaboard Air Line, with headquarters at Norfolk, Va., has been appointed freight traffic manager in charge of the rate department, with the same headquarters. The position of assistant freight traffic manager formerly held by Mr. Rice has been abolished.

Vance H. Williams, general agent for the Chicago & Illinois Midland at Chicago, has been promoted to traffic manager, with headquarters at Springfield, Ill., and the position of assistant to the senior vice-president in charge of traffic has been abolished following the retirement of **F. W. Shappert** on February 1.

T. H. Lawrence, general passenger agent of the St. Louis Southwestern of Texas, with headquarters at Tyler, Tex., has in addition been appointed general passenger agent of the St. Louis Southwestern. **C. M. Cootes,** assistant general passenger agent of the St. Louis Southwestern, has in addition been appointed assistant general passenger agent of the St. Louis Southwestern of Texas and his headquarters have been removed from St. Louis, Mo., to Tyler.

Thomas G. McClellan, general western agent of the Nashville, Chattanooga & St. Louis, with headquarters at St. Louis, Mo., who died on February 4 at the age of 62 years, was born at Somerville, Tenn., and entered railway service in 1889 as a clerk in the office of the general agent of the Memphis & Charleston (now part of the Southern). The following year he was advanced to commercial agent at St. Louis and in 1898 he was transferred to Memphis, Tenn., later in the same year being appointed division freight agent on the N. C. & St. L. Mr. McClellan had held the position of general western agent at St. Louis since 1900 though because of ill health he had been inactive for the past three years.

Engineering, Maintenance of Way and Signaling

John E. Bailly, Jr., has been appointed assistant valuation engineer of the Elgin, Joliet & Eastern, with headquarters at Joliet, Ill.

E. P. Hawkins, division engineer of the Central Kansas division of the Missouri Pacific, with headquarters at Osawatomie, Kan., will retire from the service of that road on February 19. **V. C. Halpin,** division engineer at Monroe, La., has been transferred in the same capacity to the Central Kansas division, re-

placing Mr. Hawkins. He will in turn be succeeded as division engineer at Monroe by **G. S. Smith,** assistant engineer at St. Louis, Mo.

R. A. Van Ness, resident engineer on the Panhandle & Santa Fe at Amarillo, Tex., has been promoted to bridge engineer of the Atchison, Topeka & Santa Fe System, with headquarters at Chicago, succeeding **A. F. Robinson,** deceased.

A. B. Chaney, assistant engineer on the Missouri Pacific at Van Buren, Ark., has been promoted to division engineer of the Little Rock division, with headquarters at McGehee, Ark., succeeding **J. S. Bassett,** who has been transferred to the Arkansas division, with headquarters at Little Rock, Ark., and with jurisdiction over the Little Rock, Hot Springs, Norman, Pike City and Nashville districts. The jurisdiction of **H. D. Knecht,** division engineer on the Arkansas division at Little Rock, has been changed to include the Hoxie and Doniphan districts and the Little Rock terminal.

Mechanical

George Crowder, general foreman of the mechanical department of the Georgia & Florida, has been appointed superintendent of motive power, with headquarters at Douglas, Ga., succeeding W. H. Dyer, deceased.

W. C. Sealy, acting superintendent of shops on the Canadian National at Stratford, Ont., has been promoted to superintendent of shops, with headquarters at the same point, succeeding **G. M. Wilson,** who retired from active service on January 1.

Isaac Perez, who served as master mechanic at various points on the National of Mexico since 1916, has been appointed master mechanic, with headquarters at Matias Romero, Oax., succeeding **Jose Morales Sanchez,** who has been transferred to Cardenas, S. L. P.

C. J. Henry, assistant master mechanic on the Eastern division of the Pennsylvania at Canton, Ohio, has been transferred to the Wheeling division at Mingo Junction, Ohio, succeeding **J. S. Richards,** who has been appointed master mechanic of the Erie and Ashtabula division with headquarters at Mahoningtown, Pa.

F. N. Hibbits, superintendent of motive power of the Lehigh Valley, with headquarters at Bethlehem, Pa., having voluntarily resigned from that position, has been appointed consulting superintendent of the department. **J. P. Laux,** superintendent of the Sayre shops, has been promoted to superintendent of motive power, succeeding Mr. Hibbits. **D. W. Davis,** master mechanic of the Wyoming division, with headquarters at Wilkes-Barre, Pa., has been appointed superintendent of the Sayre shops, he will also assume the duties of master mechanic of the Seneca and Auburn divisions. **M. Jefferson,** master mechanic at Sayre, Pa., has been appointed master mechanic of the Wyoming division.

A Peers, district master mechanic of the Saskatchewan district of the Canadian Pacific, with headquarters at Moose Jaw, Sask., has been transferred to the British Columbia district, with headquarters at Vancouver, B. C. **H. M. Smith,** division master mechanic of the London division at London, Ont., has been transferred to the Schreiber division at Schreiber, Ont. **F. D. Warner,** general locomotive foreman at Moose Jaw, has been promoted to division master mechanic of the Moose Jaw division at the same point, succeeding **W. G. McPherson,** who has been promoted to district master mechanic of the Algoma district, with headquarters at North Bay, Ont. **E. J. Lemieux** division master mechanic of the Regina division at Regina, Sask., has been transferred to the Lethbridge division at Lethbridge, Alta., succeeding **G. H. Noewoll,** who has been transferred to the Regina division.

Obituary

W. E. Mallory, assistant trainmaster on the Renovo division of the Pennsylvania, died on January 16.

E. C. Griffin, general agent for the Chicago & North Western at Portland, Ore., died on a Southern Pacific train near Klamath Falls, Ore., on February 10 from a heart attack. Mr. Griffin was 60 years of age and had been in the service of the North Western since 1888.

William Henry Thompson, general freight agent of the Missouri Pacific at St. Louis, Mo., who died on January 18, had been in the freight department of that railroad for more than 15 years. He was born on August 22, 1884, at Versailles, Ky., and entered railway service on the Louisville & Atlantic (now part of the Louisville & Nashville). Subsequently Mr. Thompson served with the Southeastern Freight Association at Atlanta, Ga., as auditor of the Louisville & Atlantic, with the Southwestern Tariff Committee and as clerk, chief clerk to the general freight agent, chief clerk to the freight traffic manager and assistant general freight agent on the Missouri Pacific. He was promoted to general freight agent on April 1, 1927.

Lewis W. Karnes, superintendent of the Springfield division of the Wabash, with headquarters at Springfield, Ill., died at St. John's hospital in that city on January 5, following two weeks' illness from heart trouble. He had been connected with the Wabash for 40 years and at the time of his death was 56 years of age. Mr. Karnes entered railway service as a messenger on the Wabash at Litchfield, Ill., then serving successively as telegraph operator at that point and as chief clerk to the trainmaster at Decatur, Ill. In 1905 he was advanced to trainmaster on the Springfield division, later being transferred to the Decatur-St. Louis division. He was then promoted to superintendent of the Moberly division with headquarters at Moberly, Mo., where he remained until December 1918, when he was transferred to the Springfield division.

Fayette S. Curtis, president of the Old Colony Railroad and a former vice-president of the New York, New Haven & Hartford, died at his home in Boston, Mass., at the age of 85. Mr. Curtis was born in Oswego, N. Y., on December 16, 1843, and entered railway service in 1868, as a civil engineer with the Albany & Susquehanna. After serving as assistant engineer for several other railroads he was appointed chief engineer of the New York & Harlem River in 1874 and two years later he became chief engineer of the New Haven, in charge of construction. In 1900 he was elected a vice-president of the New Haven, from which position he resigned in 1907. He was subsequently elected president of the Old Colony Railroad, which position he held at the time of his death. He was also chairman of the board of trustees of the Boston Terminal Company and president of the Union Freight Railroad.

Charles L. Addison, assistant to the vice-president of the Long Island, with headquarters at New York, who died at his home in that city on February 13, was born on June 14, 1886, at Reading, Pa. He was graduated from Lehigh University in 1888 and entered the service of the Long Island in 1890 as signal engineer. He held that position until September, 1892, at which time he became associated with the Johnson Signal Company. In 1893 he returned to the Long Island as signal engineer, remaining in that capacity until 1893, when he was appointed general roadmaster. From 1901 to March, 1904, Mr. Addison was superintendent of transportation and on the latter date he was appointed general superintendent. On November 24, 1905, he was appointed assistant to the president, serving in that capacity until January 18, 1923, at which time he was appointed assistant to the vice-president. He held the latter position until the time of his death.

ELECTRIFICATION OF THE MIDI RAILWAY in France is progressing rapidly with 850 kilometers (527.85 miles) already electrified. The construction program of the road for the next five years calls for the electrification of an additional 1,100 kilometers (683 miles). The expenses of the new construction are expected to amount to approximately 500,000,000 francs ($19,700,000), including electric rolling stock required to replace the steam units now in use. Of the new locomotives to be used, 60 per cent will be furnished by local industry, while 40 per cent will come from Germany as a reparations-in-kind payment. When this present project has been realized, an additional 400 kilometers (248.4 miles) of line will be electrified.

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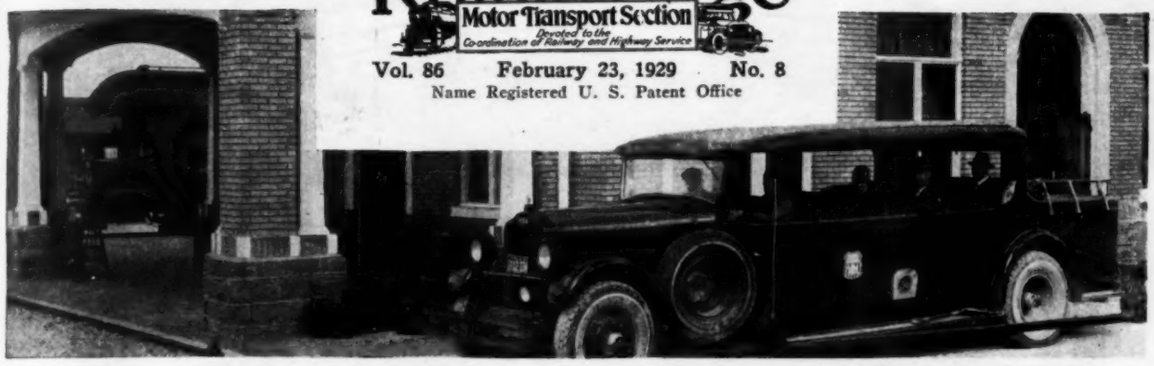

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The Railway Age is a member of the Associated Business Papers (A. B. P.) and of the Audit Bureau of Circulations (A. B. C.)

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Railway Age
Motor Transport Section
Devoted to the Co-ordination of Railway and Highway Service

Vol. 86 February 23, 1929 No. 8

Motor Transport Division Meets at St. Louis

THE Motor Transport Division of the American Railway Association will hold its first meeting of the year at St. Louis, Mo., next week, from February 26 to March 1, inclusive. It should be the best meeting yet held by this division, not only from the standpoint of attendance, but also by reason of the report to be presented by the committees of the motor coach, motor truck and rail motor car sections. These committees were scarcely organized at the time of the last meeting, but they have now had time to get into their subjects. The programs of the previous meetings have suffered from the fact that they have been limited to three days, affording insufficient time for the thorough discussion of the many subjects receiving the attention of the division. The St. Louis meeting, however, will extend over an extra day, enabling one full day to be allotted to each section of the division, and a fourth day for an open meeting with representatives of the automotive industry. The selection of St. Louis as the meeting place was particularly fortunate, in view of the fact that some of the leading railway motor transport operations have their headquarters in that city. The Missouri Pacific and the Cotton Belt are in the midst of the establishment of comprehensive systems of motor coach and motor truck lines, and the Columbia Terminals Company operates at St. Louis one of the outstanding tractor and trailer operations for the handling of freight in terminals. Those attending the convention of the Motor Transport Division will undoubtedly find it worth while, during their visit to St. Louis, to study these operations and their purposes carefully.

Motor Transport of Vital Concern to Freight Traffic Officers

POSSIBLE steps which are open to a business organization for increasing its profits without raising unit prices to its patrons fall into two main categories: First, securing a greater volume of business and, second, handling existing business at lower unit costs. The railroads, taken as a whole, have little control over their total volume of business. If it increases rapidly, then so much the better for them. If, however, it increases but slightly, or declines, nevertheless there is not necessarily any cause for discouragement. The railroads, which have seen their passenger traffic decline and the rate of increase in freight business materially lowered, have shown that, by greater attention to methods and organization, they have still been able to carry on and to make some enviable records in the face of lower rates and increased wages. Working under such conditions necessitates a great degree of alertness in searching out and seizing upon new methods which offer promise of performing a given service at lower costs. There has been a great incentive recently for the adoption of new methods and practices in the field of passenger transportation, for the reason that a great many railroads are conducting this business at an actual out-of-pocket loss. This fact probably explains the relatively greater interest so far manifested by the railways in rail-highway passenger co-ordination than in similar co-ordination in freight service. On the other hand, since total freight revenues and expenses are so much larger than passenger revenues and expenses, is it not entirely possible that equal attention paid to railway and motor truck co-ordination might be in the end just as important? As was pointed out in the *Railway Age* of November 24, a five per cent decrease in the costs of handling freight business would increase net railway operating income almost three times as much as a similar percentage of decrease in the cost of providing passenger service.

Mr. Van Doren Discusses the Regulation Question

AN article by Ray N. Van Doren, vice-president and general counsel of the Chicago & North Western, is presented in this issue of the *Motor Transport Section,* entitled "Regulation—a Vital Question." It is a discussion of the new Parker bill, now before Congress, which provides for the regulation of interstate common carrier motor coach lines, and is believed to be one of the soundest expositions of the subject of motor transport regulation which has ever been presented. With only a few days remaining before the adjournment of the present short session of Congress, it is considered doubtful if the new Parker bill will be acted upon. All of the interests which have sponsored legislation of this sort in the past seem to be united in favor of the present bill, but in spite of this, it appears that Congress has its hands too full with other pressing matters to permit it to devote its attention to this bill. Even if the new Parker bill does not pass at this session, however, a similar one will undoubtedly be presented at the next session of Congress, so that Mr. Van Doren's discussion of the present bill is even now not untimely. On the contrary, it presents arguments which might well apply at any subsequent argument on regulation.

Mr. Van Doren does not consider the new Parker bill a perfect piece of legislation, but he does consider it a workable bill and a step in the right direction. Worked out as it was by representatives of organizations with unlike, and perhaps even opposing interests, the bill naturally represents a good deal of compromise.

Mr. Van Doren believes that the bill, calling for what may be said to be a minimum degree of regulation, will nevertheless stabilize the motor coach business by giving it the sanction of public approval and by preventing uneconomic development and expansion. It will subject motor coach operation to public control in order that these common carriers shall be made to serve rather than to exploit the public, and it should eliminate cut-throat competition between motor coach lines, of which there has been far too much in the past.

Mr. Van Doren admits that the Parker bill gives scant consideration to the railways. He believes, however, that it gives the railways all that they have a right to expect, which is fair competition without legal preference or subsidy. Pointing to the fact that the railways themselves are now establishing extensive motor coach lines, and in order to do so are having to deal with the existing independent lines, he emphasizes the fact that under the Parker bill the railways, in purchasing independent lines will know what they were buying and will be protected against other lines entering the same field. Furthermore, one section of the bill will protect a railroad against the Clayton anti-trust act in purchasing competing highway lines, or in owning the stock of a subsidiary company operating a highway line in competition with that of the parent railroad company. This last consideration is felt to be highly important to the railways.

We shall always have the regulation question with us. It is inevitable that sooner or later some form of regulation of the interstate motor coach lines will be put into effect by appropriate legislation. It is too much to expect that a perfect form of regulation of highway carriers will be attained in the first bill that is passed, but the better the initial regulation, the less need there will be for early and drastic changes in it after it has been put into effect. Mr. Van Doren's article points out certain fundamentals which should be provided in any legislation, and it is therefore worthy of the careful study of all those, whether they agree with him or not, who have anything to do with interstate motor coach operation or competition with interstate motor coach lines.

The Container Service Hearings

RAILWAY officers from all parts of the country were in attendance at the Washington sessions of the hearing in connection with the Interstate Commerce Commission's investigation into container freight service. The large attendance, which filled the hearing room during the four days of the opening sessions, indicates the interest which has been precipitated by the development of this new shipping device and the widespread concern which has been aroused by proposals for its more general adoption.

The initial testimony regarding the service lends credence to the belief that such general interest is not undue. Witnesses representing those roads which now offer container service were in agreement that the container permits a more economical handling of l.c.l. freight, by its reduction of platform handling and accounting costs. Furthermore the service apparently facilitates the loading and unloading of freight for movement between rail heads or stations and the business houses of railway patrons, thus permitting a more ready co-ordination of rail and motor truck operations.

The foregoing indications were recognized by Attorney-Examiner Harry C. Ames in closing the Washington sessions, when he found a strong presumption that the cost of operation of container service is less than that for l.c.l. freight. He added, however, that these facts do not prove whether the net revenue is greater than that of the merchandise service, since the evidence already presented indicates that the revenue from container traffic is somewhat less than the amount of the regular rates for l.c.l. merchandise service.

The main protest against the extension of container services seems to be directed against the container-mile rate situation. This mileage rate which disregards the nature or value of the commodity in transport, was held by a non-railway witness to be wrong in principle, since it breaks down the traditional basis upon which charges are fixed. The witness of a railway which provides container service, in commenting on this alleged disregard of previous rate-making practice, stated that, while the departure might seem radical, he nevertheless regarded net revenue as the final index and held the container-mile rate to be desirable if it produced a greater net. This witness, however, regarded carload operations to be as economical as container handling and considered the situation undesirable where the container-mile rate reduced the carload rate. Another railway witness whose road, while operating containers nevertheless joined other carriers in protesting against their extended use, stated that such protest was founded in a dissatisfaction with the present rate base for container freight. This witness thought that a container rate could be evolved which would not only satisfy present objections, but would in addition permit railways to meet the competition of independent trucking concerns.

In view of these initial developments, Examiner Ames requested representatives of all railroads operating container service to conduct a thorough cost-study test for 30 days to show the cost of such service as compared with that of the regular merchandise service. These studies are to be submitted when the hearing is resumed at New York about April 4 after the sessions at Dallas and Kansas City.

If, therefore, the container is a device which could be utilized by all railroads to effect operating economies and to facilitate rail and highway co-ordination by providing a unit easily moved from car to truck, or vice versa, then these hearings should clearly disclose that fact. If, also, there are objections, on the part of some, that containers now in use do not answer the peculiar requirements of certain territories, then the hearings will offer valuable suggestions to container designers and manufacturers. No railroad wishes to make an innovation which will reduce its net revenue. The disagreement which exists regarding this question ought to be largely dissolved when extended testimony, based on careful cost and rate studies, removes this question from the realm of conjecture. Other advantages or disadvantages of container service ought to stand out with increasing clarity. It is a case which railroad men, whether they be partisan or neutral on the issue, may follow with the greatest profit.

Regulation—a Vital Question

The history and provisions of the new Parker bill, and the effect its passage would have on the railways

By Ray N. Van Doren

Vice-President and General Counsel, Chicago & North Western

FOR several years the subject of public regulation of motor vehicles on the public highways has had the attention of the public in various forms. As a result most states now have regulatory laws affecting either motor coaches or motor trucks, or both. Until the decision by the Supreme Court of the United States in the case of Buck v. Kuykendall (267 U. S. 307), it was a quite general practice for states having such laws to regulate and control the operation of interstate motor vehicles within the respective boundaries of such states.

When the Supreme Court held in that case that such interstate operations were beyond the power of state control, a large field of unregulated operation was opened for development, if not of exploitation. Many motor coach operators which theretofore had operated intrastate only, were quick to seize the opportunity thus afforded of escaping all regulation by slightly extending their operations across state lines. Those who had theretofore engaged in bona fide interstate operations were encouraged to further extend their lines, while still others entered the field for the first time in competition with established routes.

The intrastate operators, who constituted by far the larger number both in routes and in mileage, were placed at a decided disadvantage as against their unregulated interstate friends. States and communities fretted at the lack of legal control over their highways, and saw their powers thwarted by the schemes which were resorted to by intrastate operators to escape their jurisdiction.

A situation was presented which required relief. Bills were introduced in the 69th and 70th Congresses providing for a quite extensive control of interstate motor coach operations. Thereupon, the Interstate Commerce Commission upon its own initiative entered into an investigation of the entire subject of interstate motor vehicle operations for hire upon the public highways (I.C.C. Docket 18300). After extended hearings, the commission made findings in which it declared a necessity for the regulation of motor coaches, but left the subject of motor truck regulation for further study and consideration. The principal features of motor coach regulation were outlined by the commission, which followed generally the original Dennison Bills (H. R. 15606, 69th Congress, and H. R. 19, 70th Congress).

"Regulation will stabilize the motor coach business by lending to it the sanction of public approval and by preventing uneconomic development and expansion. It will give value to a licensed route by enabling it to be sold and transferred. It will subject such operations to public control to the end that these common carriers, like all others, shall be made to serve rather than exploit the public; and it should put an end to cut-throat competition between motor coach lines."

First Bills Unsatisfactory

Those bills were not satisfactory either to the motor coach interests or to the state commissions, and did not progress very far through the legislative processes. It was recognized by all students of the problem that there must be concerted study and co-operative effort on the part of all interests in the framing of a satisfactory measure. Such efforts were put forth and resulted in the later Parker Bill (H. R. 12380), introduced in the 70th Congress.

This bill was unsatisfactory to the National Automobile Chamber of Commerce, which opposed it before the House Committee upon the ground that its method of administration was cumbersome and indefinite. With such opposition, the bill was not advanced. In the interim between the first and second sessions of that Congress, the same interests set about to alter the features to which objection had been made, and the new Parker Bill (H. R. 15621), embodying such later efforts, was introduced in the House in December, 1928. This bill has the united support of the state commissions, the National Automobile Chamber of Commerce, the American Automobile Association, and the electric and the steam railroads. Bill H. R. 15621 (which I shall refer to hereafter as the Parker Bill) provides for the regulation of interstate motor coaches, and utilizes the offices of state commissions for the administration of the law. It provides that motor coach operators shall obtain certificates of public convenience and necessity from joint boards constituted of representatives of the interested state commissions. Such certificates are transferable, and upon the death of the holder, pass directly to his heirs.

All motor carriers in *bona fide* operation on November 1, 1928, and continuously down to the dates of their applications, are entitled to such certificates as a matter of course and without a hearing. Protection to the traveling public is required in the form of bonds approved by the commission. Rates and fares must be published in the form of tariffs which must be adhered to until changed upon due notice. Operation of the motor coaches is made subject to reasonable rules and regulations prescribed by the commission. Provision is made for an appeal from the decision of such joint board to the commission upon the record made before the joint board. Penalty is provided for operating motor coaches in violation of the act. The powers of the states as to intrastate business is not interfered with, and the police powers of the states with reference to motor carriers are affirmatively recognized.

Consideration for Existing Services

In the granting of certificates of convenience and necessity, the bill provides that the joint boards and the commission shall give reasonable consideration to existing available transportation agencies and service. This last provision is the only one in the bill which distinctly recognizes the railroad interest in the subject, but it places no restrictions upon the joint boards other than the admonition to consider the effect which the granting of such certificates might have upon existing transportation service. This provision also operates to the advantage of the motor carriers in that it requires consideration by the joint boards to existing motor carrier service as well as to other forms of transportation.

What Will Parker Bill Accomplish?

Thus is presented what may be said to be a minimum degree of interstate regulation of motor coaches. What will it accomplish? What will be its effects upon motor coach and rail competition? These are questions of importance and of some uncertainty. That it will place intrastate and interstate coach operations more on a parity with each other seems to be clear. It will afford to the states a practical control over both intrastate and interstate operations. This is desirable in the interest of uniformity, and in placing initial control close to the scenes of operations.

It will stabilize the motor coach business by lending to it the sanction of public approval and by preventing uneconomic development and expansion. It will give value to a licensed route by enabling it to be sold and transferred. It will subject such operations to public control to the end that these common carriers, like all others, shall be made to serve rather than exploit the public; and it should put an end to cut-throat competition between motor coach lines.

What of its effect upon highway competition with the railroads? This bill may be said to give scant consideration to the railroads. It should be observed, however, that it is a motor coach regulatory bill and not a railroad bill. All that the railroads have the right to claim or expect is that any competition in transportation shall be fair and without legal preference or subsidy. This, in the judgment of the writer, is secured by the Parker Bill.

The railroads have and can properly claim to have no vested right in transportation. Whenever any form of common carrier operation can transport the traffic of the country more economically or more expeditiously than can the railroads, the latter must either successfully meet such new conditions or go out of that branch of the business.

Many railroads have already entered upon quite extensive motor coach operations, and others are giving the subject careful study. The field of interstate motor coach operation is already quite largely occupied. Railroads which contemplate entering the motor coach business must, in most cases deal with existing coach lines. The railroads have stood by and seen the motor coach business develop, and they should not now be permitted without public approval to destroy the investment in existing coach lines by using the strength of their capital force. They should be required to deal fairly with the motor coach interests.

Under the Parker Bill, the railroads will be able to treat with the motor coach lines; and when purchasing such lines, they will know what they are buying and will be protected against other lines entering the same field by the requirements of public convenience and necessity. This is a feature of the Parker Bill which operates to the distinct advantage of railroads which contemplate entry into the motor coach transportation field. If they are unable to buy out existing coach lines, the railroads must, as they should, prove the public necessity for another motor coach line over that particular route. Once they have acquired such certificated routes, the railroads will be protected against further competition so long as they can maintain a sufficiently adequate service to convince the joint boards that no additional service is necessary. Furthermore, the provisions of Section 15 of the Parker Bill protect the railroads against the Clayton Anti-Trust Act in purchasing competing highway lines, or in owning the stock of subsidiary companies operating highway lines in competition with the railroads themselves.

As to the railroads not now in the motor coach business, and which do not contemplate entering such business, the Parker Bill will ameliorate the existing competitive situation by requiring the publishing of rate schedules and an adherence thereto. This is a decided improvement over existing conditions of uncertain and changing rate schedules, which make it impossible for the railroads to know what competitive conditions they must meet. If this bill becomes a law, the railroads can rely with some degree of assurance upon schedules of rates filed by motor coach lines and will be in position to determine whether or not they can successfully compete therewith. Thus will the railroads be able to devote their energies to solving the problems of this new form of competition and determine whether or not it presents an insurmountable obstacle to railroad progress.

Parker Bill Workable

The Parker Bill, as has been said, was the composite effort of many minds. It was not claimed by those who had to do with its preparation that it was a perfect bill; but it was thought that it was a workable bill and a step in the right direction. However, since its introduction in the House, it has been subjected to much scrutiny and some criticism.

It is reported that the Interstate Commerce Commission suggests further amplification as to the consideration to be given to existing means of transportation service. This would seem to be so essentially a matter of judgment as to render it incapable of specific treatment. Yet because of this attitude upon the part of the commission, the bill may fail to be acted upon at this session.

Then, also, the question has been raised as to the necessity for any rate regulation of motor coach lines. This is so fundamentally a part of even a minimum

regulatory measure as to raise the question of the good faith of those who advocate its elimination. Without rate regulation to some extent, no effective restraint upon competition can be hoped for. The railroads are entitled to some consideration in this matter; and they should be protected against uncertain and ever-changing rate schedules which make it impossible for them to adjust their rates to those of the coach lines. Of course, if the purpose be to favor the motor coach interests and to give them a regulatory advantage over the railroads, then elimination of rate regulation is the thing to have. If, on the other hand, it is desired to permit of the economic development of competitive transportation agencies, there should be some semblance of equality of competitive conditions. It cannot reasonably be expected that the railroads will continue to lend their support to this measure with the removal of all of the elements thereof which would place the competing groups more nearly upon a parity. Perhaps the bill could be passed despite the opposition of the railroads, with these provisions eliminated; but essential justice would not be done and the uneconomic regulation of the railroads would be aggravated thereby.

The Future of Regulation

What the future of bus regulation will be, no one can foretell. We should not be so vindictive as to wish upon the motor coach lines such a degree of regulation as the railroads now enjoy. If, however, the motor coach industry is in harmony with the economic development of the nation, and its operators are to be regarded as public service corporations, using the public highways for which they have not paid, and are to continue to compete with other recognized and long-existing forms of common-carrier transportation, they should be required to place such competition upon a basis which will be just and equitable to their competitors. Then let the fittest survive.

It would appear that our friends, the state commissions, do not want the railroads to compete with the coach lines. At the convention of the National Association of Railroad and Utilities Commissioners at New Orleans, La., on November 16, 1928, a report submitted by Mr. Morgan of Alabama was adopted criticizing the railroads for granting excursion rates in motor coach competitive territory and calling for an investigation as to the lawfulness thereof.

By obtaining certificates of convenience and necessity, motor coach operators have quite as practical a monopoly as have the railroads. So far as common carrier passenger operations are concerned, these certificated coach lines have the exclusive use of the public highways. That they will have obtained valuable rights if this bill passes cannot be doubted. With such rights must go corresponding obligations to the public, which, it may safely be predicted, will require additional legislation from time to time. To the extent to which the motor coach interests anticipate the public thought will such legislation be averted or postponed.

A TOTAL OF 9,753 MILES of Federal-aid highways were improved during the year ending December 31, 1928, by the 48 State highway departments and that of Hawaii, in cooperation with the Bureau of Public Roads of the United States Department of Agriculture. Of that total, according to figures compiled by the bureau, 7,625 miles had not previously been improved with Federal aid, while 2,128 miles which had already been so improved were brought to higher stages of construction. These figures bring the total mileage improved with Federal aid, as of December 31, to 76,075 miles.

Terminal Costs on L.C.L. Freight*

By Major Elihu Church

THE two outstanding developments in railroading are first, the economies effected in line haul by heavier locomotives, bigger cars and better road bed, with lower grades and easier curves; and second, the increased costs of terminals and terminal operation. The efficiency of a transportation system is limited not by its carrying capacity, but by its terminal facilities. There is approximately one mile of terminal track to every three miles of main line. The value of the real estate used for terminals exceeds that of main line right of way. The mileage operated by switching locomotives is sometimes as high as 40 per cent of that of the line locomotives.

The operating costs at terminals are high and constantly go up as wages increase. Following are figures on the cost of loading and unloading cars at terminals and transfer points:

90 cents	to	$1.00	a ton inbound
60 cents	to	75 cents	a ton outbound
$1.50	to	$1.75	a ton inbound and outbound

Time Lost in Loading

The following abstract from a tabulation published in "Railroad Freight Transportation", by L. F. Loree, indicates the time which freight cars lose in loading and unloading:

Average trip	14.9 days	
Road movement	1.49 days	(10 per cent)
Movement for and loading and unloading	5.75 days	(40 per cent)

Thus freight starts out on the line carrying a pretty heavy accumulation of terminal expense.

The cost of moving freight from one place to another is the total cost of all the different items involved from the time the initial step is taken to collect the goods together and prepare them for shipment at the point of origin, until they are unpacked and put into stock at their destination, and includes the handling, packing, trucking and many other operations. The costs are not alone those of a railroad or line movement, nor are they only those of a door-to-door transfer; but they begin with handling in the factory, or other starting point, and only end with the disposal of the crate or box by the consignee.

Cost at Plant—Boxing and Trucking May Exceed Railroad Charges

The sum total of all these many, but incidental, items of expense often amounts to many times what is paid to the carrier for performing the line haul.

These incidental costs include, first, the handling and assembly of the shipment at the factory. Second, there are the boxing and wood costs. One-seventh of all lumber cut in the United States is consumed in the manufacture of boxes and crates. One box concern uses 2,500,000 board ft. a month; Sears Roebuck, 30 to 60 tons a day. The cost of a case is from 2½ to 4½ cents a pound, averaging 3½ cents. A 100 lb. of wood boxing costs the shipper $3.50. Third the use of cardboard, on the other hand, involves extra handling

* An abstract of a portion of the testimony offered at the Washington sessions of the hearing in connection with the Interstate Commerce Commission's investigation into container freight service of railroads.

because of the smaller units. Fourth, there is the packing labor, fifth, the waiting time of trucks, sixth, the handling from shippers' platform to trucks, from trucks to railway platforms and then into cars.

Time—Not Distance—the Important Element in Trucking Costs

The average terminal truck is moving only three hours out of its normal eight-hour day. The remaining five hours are consumed in loading, unloading and waiting time. In each stop at a railway terminal, the truck consumes about 68 minutes, 14 of which are required in loading or unloading its average load of one and one-half tons. Thus 54 minutes are consumed in waiting time at the terminal and trucking costs vary on a time rather than on a distance basis at an average truck cost of six cents a minute. This waiting time costs the shipper $3.24. Six handlings are required to complete a shipment. Transportation costs lie largely in shipping rooms and in city streets and terminals.

Little Progress Toward Solution

What has been done to better these conditions? The railroads in spite of heavy investments for additions to terminals, have maintained the same expensive operating practices—a mere multiplication of the old methods. Shippers have experimented with various forms of shipping boxes, often collapsible, to be used over and over again. Always there has been the cost of getting them back again. Where possible motor trucks have been used for the line haul for longer and longer distances. The advantages are: Door-to-door service, no handling enroute and no boxing requirements, while the disadvantage lies in the high ton-mile cost

(In his succeeding testimony Major Church outlined his plan for improved terminal handling by a scheme of co-ordinated container service. Such testimony was outlined in the report of the Washington sessions of the container hearing which was published in the *Railway Age* of February 16, page 419.—Editor.)

Program of Motor Transport Division, St. Louis Meeting

THE Motor Transport Division of the American Railway Association will meet at the Hotel Jefferson, St. Louis, Mo., on February 26—March 1. The detailed program, with the exception of several features which had not been definitely scheduled at the time of going to press, follows:

FEBRUARY 26, 10:00 A. M.

A. P. Russell, Chairman, Motor Transport Division
Report of General Committee—A. P. Russell, Chairman
Report of the Law Committee—R. N. Van Doren, Chairman

MOTOR COACH SECTION

T. B. Wilson, Chairman, Motor Coach Section, Presiding
Reports will be presented on the following subjects:

1. Depreciation of motor coach equipment and basis used in determining.
2. Importance of terminals in large cities.
3. Report of Motor Coach Section relative to endorsement of the Uniform Motor Bus Specifications Code fostered by the Society of Automotive Engineers and the National Automobile Chamber of Commerce (Motor Truck and Motor Bus Members).

Discussion of the following motor coach problems submitted by the Members:

1. Why the steam carriers should operate a motor transport service.
2. Where railways put on motor coaches, are they able to make reductions in feeder railway service to correspond, and are coaches run in competition with themselves or simply as feeders?
3. Bus operations in competitive territory by individual carriers.
4. Joint operation of motor coach service by rail lines between such points as St. Louis-Kansas City, St. Louis-Chicago, Kansas City-Chicago, and other places where independent interstate operators are making serious inroads on the long haul passenger travel.
5. Increased competition from motor coaches by the linking up of runs in order that more long distance traffic may be secured.
6. Rates, divisions, etc., involved in transcontinental motor coach service.
7. All-expense tours by combination of rail and motor coach service.
8. Relationship or lack of relationship between railroads and state highway departments as to the location or relocation of highways which may be used by competitors.
9. In territory where winter conditions are bad are motor coaches run throughout the twelve months?
10. What percentage of equipment is available for service?
11. Payment of commissions where motor coach service is operated by subsidiary of rail carrier.
12. Information as to the extent to which railroads or motor coach companies are using sleeping coaches.

FEBRUARY 27, 10:00 A. M.
MOTOR TRUCK SECTION

G. C. Woodruff, Chairman, Motor Truck Section, Presiding

1. Opening remarks by Chairman
2. Brief reports by the Regional Chairman, as follows:
   - Region No. 1—C. J. Chenworth, Engr. Asst. to V. P. & C. M., Atlantic Coast Line, Wilmington, N. C.
   - Region No. 2—P. J. Neff, Asst. to President, Missouri Pacific, St. Louis, Mo.
   - Region No. 3—B. O. Johnson, Asst. to President, Northern Pacific, St. Paul, Minn.
   - Region No. 4—Paul P. Hastings, C. F. A., A. T. & S. F., San Francisco, Calif
   - Region No. 5—J. P. O'Brien, General Manager, Oregon-Washington R. R. & Navigation Co., Portland, Oregon.
   - Region No. 6—M. F. Steinberger, Manager Highway Operation, B. & O., Baltimore, Md.
   - Region No. 7—C. T. Mackenson, Jr., Asst. to General Traffic Manager, Pennsylvania, Philadelphia, Pa.
3. Discussion of questionnaire submitted through Regional Chairmen.
4. Attitude of railroads with respect to passage of laws regulating motor trucks and placing them under jurisdiction of State Commissions.
5. Discussion of any motor truck problems submitted by the members.
6. General discussion.

FEBRUARY 28, 10:00 A. M.
RAIL-MOTOR CAR SECTION

R. L. Fairbeirn, Chairman, Rail-Motor Car Section, Presiding

Reports will be presented on the following subjects:

1. Reliable formula on which to base a decision as to whether or not the purchase of self-propelled equipment to replace a steam train is justified.
2. Comparison between Steam Train and Rail Motor Car Costs.

Discussion of Rail-Motor Car problems submitted by the members

MARCH 1, 10:00 A. M.

Open meeting with representatives of the automotive industry.

On February 27 a dinner will be tendered by the Missouri Pacific to the members of the division. At this dinner the principal speaker will be Samuel O. Dunn, editor of the *Railway Age*. The delegates have been invited by E. F. Bisbee vice-president, East St. Louis Junction Railway, to breakfast at the National Hotel, National Stock Yards, Ill., at 7:30 a.m. Feb. 27.

A Six-cylinder White Motor Coach of the Parlor Type Operated by the Southwestern Transportation Company

Southwestern Highway Systems Growing Rapidly

Missouri Pacific operating nearly two thousand miles of motor coach routes—Cotton Belt has extensive coach and truck lines

SINCE the announcement of their plans for highway operations supplementing their local railway service, the Missouri Pacific and the St. Louis Southwestern have made considerable progress in establishing their new lines. Proceeding under a general plan of securing operating certificates through the purchase of independent highway lines on routes over which they propose to establish their supplementary motor coach and truck service, these roads have been able to establish extensive highway service in the Southwest, particularly in the states of Arkansas and Texas.

The Cotton Belt, operating through its subsidiary, the Southwestern Transportation Company, has paralleled virtually all of its railway mileage in the state of Arkansas with motor coach and motor truck routes for the handling of local passengers and freight. In Arkansas the motor coach service covers routes between Little Rock, England, Stuttgart, De Witt, Gillet, Pine Bluff, Fordyce, Camden and Texarkana. The company also has an interstate motor coach route between Jonesboro, Ark., and Marden, Mo.

Cotton Belt Operates Trucks

Following its purchase of the franchise and equipment of the Arkansas Motor Express Company, the Southwestern Transportation Company has also instituted motor truck service for the transportation of mail, baggage, express and freight on the highways between all points where the motor coach service for passengers is provided. As the result of the establishment of this highway service, the Cotton Belt has been able to take off several trains on the lines parallelled by its motor coach and truck routes. In addition to the equipment taken over in its purchase of independent motor coach and truck lines, the Southwestern Transportation Company has purchased and put into operation four type W Yellow and eight Model 54 White coaches, all of the parlor type. It has also purchased a fleet of 16 motor trucks for the provision of its mail, express and freight service on the highways.

The Missouri Pacific is studying the possibility of establishing motor truck service, but as yet has put into service only motor coach lines. In the short time which has elapsed since it determined to operate motor coaches to supplement its train service the Missouri Pacific, through its subsidiary the Missouri Pacific Transportation Company, has established a large number of motor coach routes in the states of Missouri, Arkansas and Texas. It now has 200 miles of motor coach routes in Missouri, 1,187 miles of such routes in Arkansas and 447 miles in Texas, making a total of 1,834 miles of highway routes.

In Missouri the only line now in operation extends from West Plains to Birds Point, via Poplar Bluff, a distance of 200 miles. In Arkansas the transportation company operates motor coaches between Little Rock and

Interior View of a Model W Yellow Coach Operated by the Missouri Pacific

Eldorado, 151 miles; Little Rock and Batesville, 96; miles; Little Rock and Fort Smith, 172 miles; Little Rock and Forrest City, 104 miles; Little Rock and Hot Springs, 55 miles; Little Rock and McGehee, 107 miles; Fort Smith and Paris, 44 miles; McGehee and Lake Providence, 71 miles; McGehee and Montrose, 27 miles; McGehee and Arkansas City, 12 miles; Lake Village and Crossett, 47 miles; Halley and Warren, 50 miles; Benton and Texarkana, 147 miles; McGehee and Monroe, La., 104 miles. In Texas motor coaches are operated between Houston and Freeport, 66 miles; West Columbia and Angleton, 25 miles; Corpus Christi and McAllen, 160 miles; Brownsville and Mission, 70 miles; Brownsville and Point Isabel, 45 miles; Harlingen and Raymondsville, 23 miles; Harlingen and Rio-Hondo-San Benito, 29 miles; San Benito and Point Isabel, 29 miles.

Mo. P. Has 125 Motor Coaches

The Missouri line extends across a portion of the southwestern part of the state. In Arkansas the motor coach routes parallel most of the Missouri Pacific railway lines, while the Texas motor coach routes are located in the extreme southern portion of the state and also in the vicinity of Houston. The transportation company now owns and has in operation 125 pieces of automotive equipment, all of the passenger type, since it operates no truck lines as yet. Most of this is equipment taken over from the independent lines which were purchased, but some of it has been ordered by the transportation company since it began its operations.

Interior View of a Cotton Belt Yellow Coach

The motor coach lines purchased by the transportation company up to this time are the Sansing Line, the Scofield Line, the Smith Arkansas Traveler Line, the Rainbow Stage Line, the White Star Line, the Black Diamond Line, the Blue Border Line, the Connerly Line, the Walden Line and the Travelers Transit Line.

Further Extensions Proposed

Recently the transportation company secured an option on the Capitol Stage Lines and has made application jointly with the owners of this company to the Missouri Public Service Commission for permission to have the certificate and equipment transferred. This line extends from Kansas City, Mo., to St. Louis, through Jefferson City and Sedalia, a distance of 287 miles. The company has also applied to the Missouri Public Service Commission for permission to discontinue passenger train service between Kansas City and Joplin, and to replace it with motor coach service on the highway paralleling the Missouri Pacific railway line.

Missouri Pacific Questionnaire

A comprehensive questionnaire was used by the Missouri Pacific in its preparations for motor coach and truck operations. This questionnaire was designed to secure detailed information relative to the status last fall of highway and air transportation in the territory served by the Missouri Pacific Lines, and was addressed by John Cannon, vice-president and general manager, to all agents of the railway. From the returns to this questionnaire, summaries of the situation were prepared, which resulted in the decision of the Missouri Pacific to launch a program of system-wide highway operations through its subsidiary, the Missouri Pacific Transportation Company.

The Missouri Pacific Motor Coach Fleet Includes Several Yellow Coaches of this Model

The questionnaire is reproduced below:

QUESTIONNAIRE

Aviation:

(a) Is there an air landing field in or adjacent to your city? .....

(b) Approximate acreage in field.....

(c) Is it improved, that is, provided with hangars, lighting, gasoline supply, etc?.....

(d) Are there run-ways provided, and if so, kind, that is, cinder, concrete, etc.....

(e) Is airport served by industry track, and if so, give name of railroad.....

Buses and Trucks:

(f) Is your station on designated state or federal highways? If so, furnish a brief description of each such highway in the space below, covering the following points:

1. State or federal number,
2. Whether improved or unimproved,

One of the Six Model 54 White Motor Coaches Operated by the Cotton Belt

3. If improved, kind of pavement, i.e., gravel, brick, asphalt, concrete, etc., and width of pavement,
4. If not improved what, if any, improvements in contemplation or authorized?

Highway Number:
Highway Number:
Highway Number:

(g) Names of bus lines (passenger) (other than local lines within city limits) operated in, out or through your city. Give brief description of the kind of buses operated by each line, passenger capacity, manufacture, etc. State also for each line whether it has a depot or where it collects and discharges passengers.

Name of Line
Name of Line
Name of Line

(h) Number buses operated separately by each line listed above.

Name of Line *Number of Buses Owned and Operated*

(i) State the initial and final terminus of each bus line and principal towns through which operated:

Name of Line *Initial Terminal* *Final Terminal* *Principal points thru which operated*

(j) Are buses well patronized?

(k) Best estimate of average number of passengers received and forwarded your station by each of above bus lines monthly.

Name of Line *Number received* *Number forwarded*

Attach copy of schedules and tariffs, so far as possible, for bus lines you have listed.

(l) Name of truck lines (freight) (other than local lines within city limits) operating in, out or through your city.

One of the Cotton Belt's Model W Yellow Coaches

Give a brief description of each line covering particularly the following points.

1. Description of the trucks used, including the load capacity in tons, name of manufacturer, etc.
2. Have they a freight station in your city. If not, where do they pick up and discharge their freight.
3. Do they use auxiliary trucks for collecting or distributing freight at your station. If so, does the same company own the auxiliary line.
4. Give fully any further information explaining the character of competition offered by these lines.

Name of Line
Name of Line
Name of Line

(m) Number of trucks operated, separately by lines listed above (do not include local trucking firms operating within city limits).

Name of Line	*Initial Terminal*	*Final Terminal*	*Principal points thru which operated*
Name of Line	*Number of Trucks Owned and Operated*		

(n) State initial and final terminus of each truck line and principal towns through which operated.

(o) Are trucks well patronized?.....

(p) Are the truck lines operating through your city soliciting business other than store door delivery?.....

(q) If so, how is delivery effected?

(r) Best estimate average number pounds of freight received at and forwarded from your station each month by above truck lines:

Name of Line	*Pounds received*	*Pounds forwarded*

Attach copy of schedules and tariffs, so far as possible for truck lines operating from or through your station.

GENERAL:

(s) Number of passenger tickets sold at your station by months:

	1924	1925	1926	1927	1928
Jan.	.....	.....	.....	.....	.....
Feb.	.....	.....	.....	.....	.....
Mar.	.....	.....	.....	.....	.....
Apr.	.....	.....	.....	.....	.....
May	.....	.....	.....	.....	.....
June	.....	.....	.....	.....	.....
July	.....	.....	.....	.....	.....
Aug.	.....	.....	.....	.....	.....
Sept.	.....	.....	.....	.....	.....
Oct.	.....	.....	.....	.....	.....
Nov.	.....	.....	.....	.....	.....
Dec.	.....	.....	.....	.....	.....
Total	.....	.....	.....	.....	.....

(t) Number cans of milk and cream shipped by baggage and express from your station by months:

	1924	1925	1926	1927	1928
Jan.	.....	.....	.....	.....	.....
Feb.	.....	.....	.....	.....	.....
Mar.	.....	.....	.....	.....	.....
Apr.	.....	.....	.....	.....	.....
May	.....	.....	.....	.....	.....
June	.....	.....	.....	.....	.....
July	.....	.....	.....	.....	.....
Aug.	.....	.....	.....	.....	.....
Sept.	.....	.....	.....	.....	.....
Oct.	.....	.....	.....	.....	.....
Nov.	.....	.....	.....	.....	.....
Dec.	.....	.....	.....	.....	.....
Total	.....	.....	.....	.....	.....

(u) Pounds less car load freight received at your station (Includes cotton.)

	1924	1925	1926	1927	1928
Jan.	.....	.....	.....	.....	.....
Feb.	.....	.....	.....	.....	.....
Mar.	.....	.....	.....	.....	.....
Apr.	.....	.....	.....	.....	.....
May	.....	.....	.....	.....	.....
June	.....	.....	.....	.....	.....
July	.....	.....	.....	.....	.....
Aug.	.....	.....	.....	.....	.....
Sept.	.....	.....	.....	.....	.....
Oct.	.....	.....	.....	.....	.....
Nov.	.....	.....	.....	.....	.....
Dec.	.....	.....	.....	.....	.....
Total	.....	.....	.....	.....	.....

(v) Pounds less car load freight forwarded from your station. (Includes cotton.)

	1924	1925	1926	1927	1928
Jan.	.....	.....	.....	.....	.....
Feb.	.....	.....	.....	.....	.....
Mar.	.....	.....	.....	.....	.....
Apr.	.....	.....	.....	.....	.....
May	.....	.....	.....	.....	.....
June	.....	.....	.....	.....	.....
July	.....	.....	.....	.....	.....
Aug.	.....	.....	.....	.....	.....
Sept.	.....	.....	.....	.....	.....
Oct.	.....	.....	.....	.....	.....
Nov.	.....	.....	.....	.....	.....
Dec.	.....	.....	.....	.....	.....
Total	.....	.....	.....	.....	.....

(w) What is the population of your city?.....

(x) State briefly what, in your opinion, should be done to regain lost rail traffic, hold present traffic and secure new traffic.

Signed .....
Agent.

....
Name of Station. State.

Burlington to Operate Large Motor Coach System

THE first railway in the middle west to embark upon a program of system-wide motor coach operation, the Chicago, Burlington & Quincy has announced the organization of a motor coach operating subsidiary, the Burlington Transportation Company, which will establish highway routes in the twelve states served by the Burlington. A charter has been secured for the subsidiary in the state of Illinois, the transportation company having a nominal capitalization of $500,000. The motor coaches to be operated by the transportation company will augment and perhaps in some instances replace train service along the Burlington railway lines.

Statement of Plans

In a statement regarding the plans of the Burlington, C. E. Spens, executive vice-president, said, "After seventy-five years of what we feel has been good railroad service, we have decided to go into the motor coach business and extend to it the same standard of operation and service that has characterized our rail service. We will buy the finest type of modern equipment and employ the highest class of operators. Motor coaches will be run on schedules augmenting the rail service. We have not yet worked out schedules or decided upon zones of operation. Our first order will be given at once so that by early summer we will be ready to inaugurate a service of from 3,000 to 5,000 motor coach miles per day, which later will be extended to cover the territory of the 10,000 miles of Burlington railroad in the twelve states through which we operate."

ANNOUNCEMENT OF A WORLD MOTOR TRANSPORT LIBRARY printed in four languages, to be issued by the National Automobile Chamber of Commerce, was made in a report of the Export Committee of that body to the directors' meeting of that organization, held January 30 in Chicago. The library will consist of a series of pamphlets dealing with the fundamentals of motor trade and transport. The series has been undertaken to further the exchange of automotive experience between the United States and other countries. "Street Traffic" is the subject of the first pamphlet, which has already been published. This initial booklet has been prepared under the direction of the Street Traffic Committee of the chamber, of which John J. Raskob is chairman.

Effective Maintenance Depends Upon Co-operation*

How joint effort to reduce cost of upkeep of equipment is secured by the Baltimore Coach Company

By Adrian Hughes, Jr.

Superintendent, Bus Transportation, United Railways & Electric Company, Baltimore, Md.

SOME of the principal factors contributing to effective, economical maintenance are the following: First, there must be adequate, well-equipped shop buildings, providing the space and facilities necessary for proper storage, inspection and repair; second, there must be an efficient maintenance division, made up of skilled and trained mechanics and shopmen, headed by a competent supervisor; third, there must be a carefully arranged inspection system, systematically adhered to; and fourth, there must be a practical means of co-operation between the maintenance division and all other divisions of the operating organization; that is, there must be a management which will know how to coordinate the work of the entire organization so as to insure the most satisfactory service at the lowest possible cost.

The most important of these factors is the last, that of cooperation. It is difficult to segregate from the entire organization a part which can be considered solely responsible for maintenance. It seems necessary to include the entire motor coach organization in fixing the responsibility for this one phase. It includes the management, the office division, the operating division, the garage and shop division, and even the selling division. The work of these various divisions must be properly coordinated for satisfactory maintenance results. Each of the division organizations must know something of the work of the other divisions and have a comprehensive idea of the general organization so that they will know where their work fits in with the whole.

Sole Responsibility Not On One Man

It is perhaps ordinarily considered that full responsibility for the maintenance of equipment rests with the superintendent of equipment. He coordinates the shop and garage work. It is his duty to study constantly both the general methods of the shop and methods for handling the various detailed processes, and he is held responsible for keeping up-to-date on materials, equipment and practices. In the last analysis, however, he is limited in the scope of his activities and is dependent upon the cooperation of the remainder of the organization. He can work out and install the inspection systems and shop procedures but he cannot of himself bring about this needed cooperation.

It is apparent, therefore, that the sole responsibility for the standard of maintenance that must be adhered to and the amount of money that should be spent for this purpose cannot be placed solely upon even the superintendent of equipment. His knowledge of the equipment makes his opinion valuable in determining what standard and what allowance should be set, but the responsibility for the final determination must rest with the organization as a whole and the management.

There is need for some practical direct method of indicating when the proper balance between the standard of maintenance and the cost of maintenance has been reached. This should not be left altogether to personal opinion. An effort has been made in Baltimore to use, for a measure of the condition of the equipment in determining the proper allowance for this purpose, the number of road failures or service calls per ten thousand miles of operation. This record has been used frequently to determine the degree of satisfaction of the service, but its value as an aid in determining the proper limitation of expense may not have been fully tried out. The trend of this item from month to month and from year to year should be a very positive indication of the condition of the equipment and should reflect the effect of the expense incurred for maintenance.

Satisfactory Maintenance Depends On Co-operation

I want to show the effect that cooperation with the other divisions and the general practices of the whole organization have on maintenance costs and effectiveness, and to point out practical methods for bringing this about in a motor coach operating organization.

The statement has frequently been made that maintenance begins on the street. It does begin on the street with the operating forces, and it involves the men in the office. Just as the cost of maintenance is merely a part of the total cost of operating motor coaches and is no more and no less important than any other part, so is the maintenance division just a part of the entire organization, just as important but no more so than any other part. Satisfactory functioning of the maintenance division depends to a great extent on cooperation from the other divisions of the organization.

Not only must the work of each of these divisions be done as perfectly as possible as a division, but it must be clear how and where the work of each fits in with the others. There must be frequent meetings and consultations by the supervisory forces of all of these various divisions. In fact, the success of a business or undertaking of any sort depends upon the entire organization. There is no such thing as a one-man organization if more than one man is required for getting out the work of that particular business.

The most effective way of bringing this about in Baltimore has been through the medium of weekly meetings of the entire supervisory force and the office forces. The result of this system over a period of three years has been a constantly decreasing cost of maintenance, with an improvement in the operation of equipment and

* From a paper presented at the joint meeting of the Metropolitan Section of the Society of Automotive Engineers and the American Electric Railway Association in New York on December 7, 1928.

a consequent increase in revenue; and this, in face of the fact that no new equipment has been purchased.

These weekly meetings, conducted by the operating head of the coach company, are attended by the superintendent of operation, with his street men and dispatchers; the superintendent of equipment, with his shop foremen; the sales organization for the special coach business, consisting of three men; and the clerical force, consisting of a chief clerk and two assistants from the main office and a clerk from the shop. The meetings last about an hour and a half and are held at 2 o'clock on Thursday afternoon.

The matters discussed vary from general information regarding the operation of both the coach company and the railway company, to minor details about a route, a motor coach or an individual. Financial statements for the operation as a whole and for the individual routes, various statistics on costs and accidents, results of special tests and investigations, and all such information are presented and discussed. Thus each one is informed as to the general transportation situation, and he also acquires an understanding of the responsibility and scope of the work of the others. Everyone is encouraged to express his opinion freely, not only about his own particular work but about any phase of the operation. The minutes are written up and distributed to this group of men the second day after each meeting. Suggestions and other matters that require further study are referred to a committee appointed for the purpose and are reported on at subsequent meetings.

In order to insure general participation in discussions, the custom recently was started of having someone assigned each week to prepare a ten minute paper or talk about some phase of the operation. So far, these talks have been devoted to the man's own job, bringing out how it coordinates with the work of the other members of this group and the cooperation he requires in order to function properly.

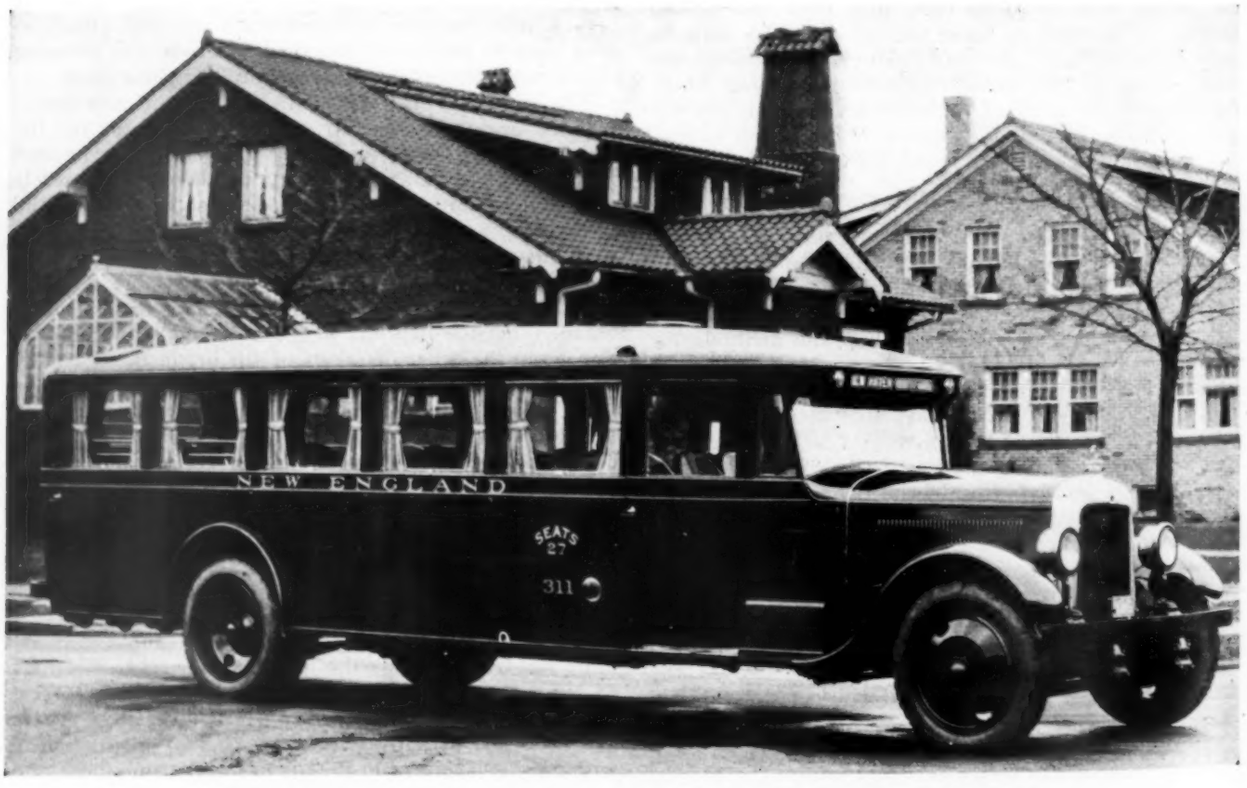
Technical Magazines Studied

All of the technical magazines, both motor coach and railway, are circulated among this group so that they can keep informed about the detailed practices and the general status of public transportation. Those articles and editorials which might be interesting for possible future reference are assigned for the preparation of a synopsis that can be written on a file card. This aids in the building up of a useful card index and at the same time makes a certain amount of reading compulsory. The value of the circulation of magazines depends upon the care with which it is followed up.

The co-operation idea is also carried on down the line, and there are regular conferences or talks with groups of chauffeurs. The rudiments of the equipment are explained, and samples of parts which have been injured by improper operation are exhibited. Interest in the work is increased and the reasons for the rules and instructions are made understandable. Some of the shopmen are present at these meetings in order to bring out here again the idea of co-operation between divisions.

These organization meetings and activities may sound as though they were far removed from the subject of maintenance of equipment. On the contrary they are very intimately connected with it, and I feel quite certain that the improvement in the condition of the equipment, with the reduction in the per mile cost of operation, could not have been obtained in any other way. Not only is a good spirit of cooperation and interest created, but there is a direct practical value in that the correct and full information received makes it possible for each one to use better judgment on his own job.

* * * *



Yellow Chassis with Lang Body in Service of New England Transportation Company

Motor Coach Fleet of West Virginia Transportation Company

B. & O. Inaugurates Highway Service in West Virginia

Initial motor coach operations of subsidiary, the West Virginia Transportation Company, cover approximately 100 route miles over five routes

THE Baltimore & Ohio, through its highway subsidiary, the West Virginia Transportation Company, has, since January 1, inaugurated motor coach service over five routes in the state of West Virginia. These operations, which were announced in the *Motor Transport Section* of December 22, 1928, page 1282, extend over approximately 100 route miles.

When the service was opened three routes were established, but during the past month service was inaugurated on a fourth, while the purchase of an independent operation gave the railway its fifth motor coach line. Thus at the present time the B. & O. highway service is available between the following West Virginia points:

Grafton to Clarksburg	20 miles
Weston to Buckhannon	15 miles
Cairo to Parkersburg	28 miles
Grafton to Fairmont	22 miles
Grafton to Rosemont	12 miles

The Grafton-Rosemont line is the one which was acquired when the B. & O. took over the Bartlett Brothers Bus Line. There is a two-mile branch run from Simpson to Wendel on this line. All of the foregoing routes are shown in the accompanying map.

Thirteen Motor Coaches in Service

Seven A. C. F., Model 602, parlor coaches were placed in the service by the B. & O. In addition to these it acquired, through the purchase of the Bartlett Brothers line, six Studebaker parlor coaches, thus making a total of 13 vehicles for service on all routes. The former are 16-passenger vehicles with a baggage compartment in the rear. There are also included, in the rear, four emergency taxi seats. These A. C. F. coaches are painted a deep maroon with a black belt rail, bearing the subsidiary's name "West Virginia Transportation Company" in gold letters. The Studebaker's are likewise 16-passenger vehicles and will be painted in the same manner.

The motor coach service is independent of the B. & O. rail service, although coaches arrive at and depart from railway stations in addition to other designated stations in the various towns and cities on the motor coach lines. Furthermore the highway service is co-ordinated with the train schedule.

Seven daily round trips are made by the motor coaches on the Grafton-Clarksburg route. These leave Grafton at 7:30 and 10:00 a. m. and 12:30, 3:20, 4:45, 6:45 and 9:45 p. m. In the opposite direction the schedule calls for coaches out of Clarksburg at 6:30 and 8:50 a. m. and 12:15, 1:45, 4:45, 7:55 and 11:00 p. m. One hour is required to make this 20 mile run with 12 stops en route.

Co-ordination with Train Schedules

On the Buckhannon-Weston route there are six daily round trips. This is a 15-mile run, includes eight stops en route and is made in 40 minutes. Each of the six motor coach runs on this line co-ordinates with the B. & O. train schedules. For example coach No. 1, leaving Buckhannon at 3:00 a. m. co-ordinates with train No. 58 from Charleston; coach No. 3, leaving at 9:15 a. m. permits connections from train No. 53, arriving from Pickens at 9:00 a. m.; coach No. 5, leaving at 11:40 (except Sundays), co-ordinates with a 11:15 train at Buckhannon and connects with two trains upon its arrival at Weston; and coach No. 11, leaving at 9:00 p. m. permits connections from a train arriving at 8:40 p. m. The 11:40 a. m. coach is run at 11:25 on Sundays and connects with a 12:05 train out of Weston. Likewise coaches operating in the opposite direction from Weston to Buckhannon are co-ordinated with train schedules at either end of the route.

A similar road-rail co-ordination is effected in connection with the 28-mile Cairo-Parkersburg run. On this run four daily trips are made in each direction with one round trip omitted on Sunday. Coaches leave Cairo at 8:00 a. m. and 12:15, 4:00 and 7:30 p. m. Four stops are made en route with three additional station stops after arrival in Parkersburg. In the return di-

Side View of One of the A.C.F. Coaches in the B. & O. West Virginia Services

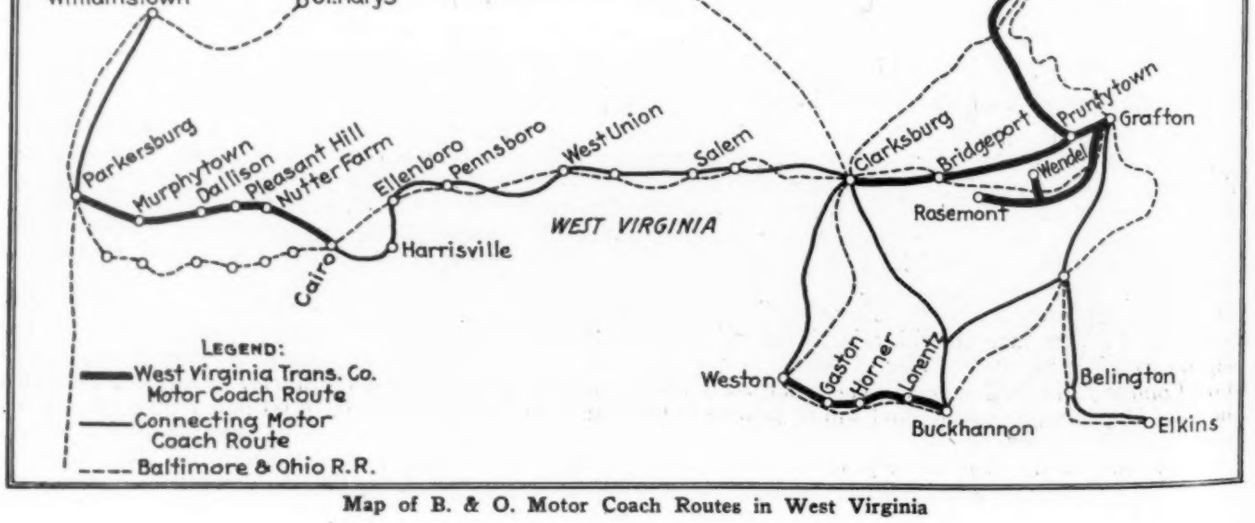
rection coaches leave the first Parkersburg station at 6:25 and 9:35 a. m. and 1:55 and 6:00 p. m. The 8:00 a. m. trip out of Cairo and the 6:25 a. m. trip out of Parkersburg are omitted on Sundays. This run requires 25 minutes and the coaches are so scheduled as to co-ordinate with B. & O. trains in eight instances.

The foregoing are the initial runs which were inaugurated on January 1. The Grafton-Fairmont operation was established on February 3. On this latter route, which covers 22 miles, five schedules are operated daily in each direction and co-ordinate with six B. & O. trains at Grafton. Coaches are scheduled out of Grafton at 6:45 and 10:00 a. m. and 1:30, 4:30 and 9:30 p. m., while on the return run, they are scheduled to leave Fairmont at 8:10 and 11:15 a. m. and 3:00, 6:00 and 11:00 p. m. Fourteen intermediate stops are made and the run from terminal to terminal requires 1 hr. 15 min. Schedules on the Grafton-Rosemont line, which was acquired from the independent on February 5, were not available when this article was prepared.

The rate of fare on the motor coaches is based on five cents per passenger-mile but concessions are made when books of tickets are purchased and on 10-ticket strips for school children. The purchasers of the book receive tickets with face value of $6.25 for $5 while the 10-ticket strips are issued at half rates. Children under five years of age are carried free when accompanied by an adult and not occupying a seat, while half-fare is charged for children between the ages of five and twelve. Motor coach tariffs and fares are filed with the State Roads Commission of West Virginia, and B. & O. agents sell tickets for the highway services.

Arrangements for Baggage Handling

Baggage up to 50 lb. is carried for motor coach passengers in the coach, in accordance with space limitations. The liability of such baggage in the event of loss or accident is limited to $50. While motor coach tickets are not accepted on trains, trunks and other large pieces of baggage may be checked in the baggage car service



Map of B. & O. Motor Coach Routes in West Virginia

of the B. & O., upon presentation of a motor coach ticket, between points served jointly by train and motor coaches. Tariff rates are also provided for the transportation, on motor coaches, of newspapers and packages with a weight limit of 50 lb. per package.

Drivers for these B. & O. motor coaches are carefully selected and are required to undergo both mental and physical examinations. In the latter emphasis is placed on color sense, sight and hearing. The drivers' uniforms are of oxford gray with the words "West Virginia Transportation Company" on the front of their caps and the shield of the Baltimore & Ohio on their arm. This shield consists of the dome of the Capitol encircled by a band in which appears the words "Motor Coach Service" and crossed by a streamer bearing the name of the railway. This shield is also placed in gold letters on the sides of the motor coaches.

The local management of the highway subsidiary is in the hands of J. Z. Terrell, manager, West Virginia Transportation Company, with headquarters at Clarksburg, W. Va. He works under the supervision of M. F. Steinberger, manager of highway transportation of the Baltimore & Ohio, with headquarters at Baltimore. At the present time, maintenance is being done under contracts with other local motor coach companies.

A 15-Passenger Parlor Coach

DE LUXE motor coaches, which seat 15 passengers, exclusive of the driver, in individual deep leather air-cushion wicker chairs on spring bases, are being built by Graham Brothers, a division of Dodge Brothers, Detroit, Mich., for the Detroit Department of Street Railways. At the rear of each coach are four seats in addition to one over each rear wheel, facing in. Six seats are arranged in pairs on the left and there are three single seats on the right. Ventilation facilities, including an electric fan opposite the door, and ventilators in the cowl and roof, insure a steady flow of fresh air. The coaches are heated by the fan blower system, the air being brought in, heated and forced through the coach. The sloping, one-piece windshield has vee-type ventilating wings at each side. The aisle space is ample.

Lockheed hydraulic four-wheel internal-expanding brakes, with a hand brake which operates on the propeller shaft, an emergency door at the rear of the coach, and a non-skid entrance step, are included in the safety features. A suggestion of the Pullman car is given by the mirrors set in the window posts.

Six-cylinder motors with four-speed transmission, particularly adapted to traffic conditions which require quick acceleration and speed, provide the power. Freedom from driving strain is assured by the nut-and-lever type steering gear, the varying ratio giving rapid action in turning and easy control on straight-away running.

The interiors are trimmed with leather, and all windows are plate glass with roller anti-rattlers inside and out. Stops are signalled by a cord attached to a buzzer in place of the customary push button.

Ample Aisle Room and Knee Space Between the Seats Has Been Provided

The coaches are 20 ft. 6 in. long and 6 ft. 5 in. wide. equipped with four hydraulic shock absorbers and balloon tires with dual rear wheels. The oak flooring, laid crosswise, is covered with linoleum. Six-candlepower, flush dome lights furnish the illumination.

A distinctive color combination is used by the street railways department, distinguishing the de luxe coaches from others operated in Detroit. Around the base of the body is a skirt of black, then a wide strip of maroon topped by a red band set off by black and gold stripes and a beige top. The wheels are red surmounted by black fenders.

One of the De Luxe Motor Coaches in Service at Detroit

Improvements Needed in Motor Coach Design*

Greater power, to afford automobile performance, and other changes in present designs demanded

By Colonel George A. Green

Vice-President, Engineering, General Motors Truck Company

IT would be wrong to say that progress in motor coach design during the past 20 years has been rapid, for it certainly has not been. The motor coach industry is still in its swaddling clothes. The lack of progress is unquestionably due to lack of foresight. Neither the manufacturers nor the electric and steam railroads, who are the largest potential buyers, were at first able to see the possibilities of the motor coach. This condition has changed now, but valuable time has been lost.

At the present time there is a clearly defined demand for at least three general motor coach types, with a number of different body styles, the so-called street car and parlor-car bodies being fitted to any of the chassis. Very briefly, these chassis types are:

(1) A small vehicle particularly suitable for school and hotel services. Both automobile and truck chassis, with relatively minor changes, are commonly employed for these uses, and the design needs no particular comment. Such vehicles accommodate from 8 to 16 passengers, and an automobile power plant provides a satisfactory performance.

(2) A vehicle which might be described as a medium-duty motor coach, with seats for from 17 to 25 passengers. There is a growing demand for such vehicles, but this demand has been slowed down as a result of unsatisfactory design. This is due to the fact that in the past these vehicles have been assembled largely from motor truck parts. On the whole, these vehicles have been a disappointment to the user. The power plants were too small, the general construction too light, and the maintenance costs have been very high. But these conditions are changing and satisfactory chassis are now available.

(3) A vehicle which might be described as a heavy-duty motor coach, seating from 25 to 40 passengers. This class of vehicle, in the smaller seat-capacities, is in general use by public utilities and others throughout the country for both urban and interurban services, including long-distance, day-and-night and coast-to-coast runs. The 40-seat capacity type is of somewhat recent development and may be described as a mass-transportation unit. The entry of this vehicle into the field has aroused a very considerable interest. The performance of the present types, particularly on the long-distance, high-speed runs, in general is decidedly poor because all such vehicles are underpowered. Such vehicles do not meet with public approval since they lack that which the public desires most, namely, automobile performance with respect to speed and acceleration. These comments are intended as general and should not be applied to any specific type.

In considering my views on power plant problems it should be understood that my criticism is directed chiefly against vehicles in class (3) for long-distance, high-speed runs. In analyzing this issue, I shall use the automobile as a basis of comparison, believing that the American public desires automobile performance.

Our tremendous weight additions result in part from increased seating capacity, but a large percentage of the added weight is due to the natural desire of the operators for improved safety, comfort, appearance, speed, acceleration, and deceleration. Another point bearing on the weight question is that manufacturers must provide equipment which will perform satisfactorily under almost any operating conditions, including misuse, abuse and poor servicing. Furthermore, since the manufacturer invariably is judged by his failures and not by his successes, a very small failure-percentage has disastrous consequences. The natural result is a tendency to build oversize, and the manufacturer actually is obliged to do this as a protective measure.

Automobile Performance Desired

Today practically everyone recognizes that all vehicles for passenger transportation are in the automobile class. Their only actual difference is in seating capacity. This, of course, is a very obvious issue now. The motor coach and the automobile employ the same highway, and the public is demanding that motor coaches compare favorably with the ordinary automobile, as now built, in safety, comfort, appearance, speed, acceleration and deceleration.

Unfortunately, however, the difficulties which have to be met in satisfying public demands as regards motor coach performance are many and varied, of which perhaps the chief is the fact that there is no universal opinion as to what constitutes the most desirable form of motor coach. It must be remembered also that there are wide differences in the requirements and conditions of the various services, including speeds, loads, road surfaces and grades. This means that, unless a vehicle is specifically designed to meet the needs of a specific kind of service, compromises are inevitable.

But in a relatively new industry we can scarcely expect uniformity of opinion on the part of both the manufacturer and the user, and it is evident that the manufacturers hold widely divergent views as regards mechanical fundamentals. For example, the purchaser is offered power plants of varying types, possessing from 4 to 12 cylinders. He may also acquire single or dual installations of both gear and gas-electric drives; and steam may become a competitor before long. The net result is a certain amount of confusion on the part of the buyer.

Americans are unmistakably automobile wise, and it is difficult, if not impossible, to tell them that they cannot have the performance from their motor coaches that they get from their automobiles, particularly taking into account the fact that many of them are willing to pay for this performance. Nevertheless it is most difficult to provide this performance, and both the purchase price and the cost after purchase have a vital bearing on the issue. Furthermore, there are serious legal and technical difficulties which must be met.

At present the various states hold different views concerning permissible coach-widths, lengths and heights, and in many instances legislation exists which conflicts in one state with another. This condition imposes needless hardships, particularly the restrictions on

* From a paper presented at the joint meeting of the Metropolitan Section, Society of Automotive Engineers, and the American Electric Railway Association in New York on December 7, 1928.

width and length. The length restriction is possibly the most embarrassing. Parlor-cars 30 ft. long over-all as a rule have seats for 29 passengers, but they are not comfortable seats because the spacing is altogether too close. A relatively small addition to the length would make a great difference in comfort, yet this is not permissible in eleven important states. As a result, the majority of these vehicles are held within a 30 ft. over-all limit. It would be possible to develop bodies of varying over-all lengths, but the introduction of a number of models means increased production costs, which are undesirable to both buyer and seller.

It is quite possible to increase the seat spacing by simply removing seats; but, inasmuch as any change necessitates the elimination of four passenger seats, such procedure is not welcomed by the average operator. In fact, from the viewpoint of revenue-loss, very often this would be impossible. The net result is that practically all urban and interurban equipment is provided with insufficient seat-spacing, with resultant passenger discomfort.

Weight and Engine Design

Reference has been made already to the tendency toward a very considerable increase in motor coach weight. To a less degree, a similar condition has arisen with the automobile. The increase in the size of automobile engines now almost represents an annual change, but this condition does not obtain with the motor coach. Most of the so-called large motor coach engines were designed four or five years ago, and their displacements remain unchanged. Naturally, improvements have been made which result in added power, but these increases are insufficient to meet the actual requirements.

In a general way we know quite well that there is a vast difference between automobile and motor coach performance. This is to be expected in view of the fact that the so-called heavy-duty motor coach engines displace only from 450 to 500 cu. in.

To be specific, let us consider the actual high-gear acceleration, in terms of miles per hour per second at from 10 to 35 m.p.h., of this year's automobiles and motor coaches, under load. It will be found that the average high-gear acceleration value for the automobile is 2.262 m.p.h. per second, and the maximum is 2.53. The corresponding motor coach figures, with a full passenger load, considering both urban and interurban equipment having various seating-capacities, are 0.5 and 1.25 m.p.h. per second. It should be mentioned that the last is an unusually good performance, as judged by present standards for motor coaches. It is clear that, comparing motor coach and automobile performance, the advantage is in favor of the automobile in terms of from 2-1 to 5-1.

Technical and Practical Problems

Following are some of the problems that must be taken into account in connection with the employment of larger motor coach engines.

The designing and development, including samples, testing patterns, tools, jigs and fixtures, would require an expenditure of at least half a million dollars to produce what might be termed a heavy-duty engine. With larger engines, the tire mileage-cost will be greater. Larger tires will be needed to carry properly the additional weight of both engine and chassis. Also, more rapid acceleration means increased tire-wear. Obviously the larger the tire, the more difficult the steering. Moreover, tire diameter increases affect the turning radius adversely. A larger engine will project further into the body, with a resultant decrease in passenger capacity. This may be partially offset by permitting the engine to project behind the dash but there is a limit to this.

The drive mechanism must be strengthened throughout, which means the enlargement of clutch, transmission, propeller-shaft and final drive. Naturally, considerable additional weight will result.

The cooling problems are involved. With a single-engine installation, the frame determines the width of the radiator, the driver's vision and the ground clearance fix the height dimensions, thermal conditions control the thickness of the core, and power losses limit the amount of air that can be drawn through the core. At present, with some designs, as much as 10 per cent of the available engine-output is at times used to drive the fan. With any very large increase in engine displacement, a greater average fuel-consumption is to be expected, but the extent of the increase will depend largely upon the character of the operation and the skill of the operator. Naturally there is a loss in efficiency when very large engines are operated at part-throttle. On the other hand, the natural tendency on the part of the driver will be to use all of the available power all of the time. Increased power should result in decreased accidents because the additional power will make it possible to maintain a higher average rate of speed without the wild bursts of speed that are now often indulged in. Also, the increased riding-comfort should attract patronage, with higher earnings as a consequence. Finally, schedule speeds will be higher, with a resultant lower platform-rate, but it is difficult if not impossible to forecast to what extent the advantages will cancel the disadvantages from the standpoint of the profit-and-loss account.

No accurate forecast can be made now as to the effect of larger engines upon operating costs generally. However, one point stands out with unmistakable clarity; namely, it is highly improbable that the performance of an internal-combustion-engined motor coach can be expected ever to parallel that of the average automobile.

Engine Design Characteristics

Having reached the conclusion that larger engines are needed, the next step is to determine their general design characteristics. Engines must be available which will make possible sustained high vehicle-speeds. There are many services where sustained speeds in excess of 60 m.p.h. are absolutely safe. But at such speeds, engines should be capable of giving reliable service day after day, year after year, with only the absolute minimum of attention. Such vehicles will regularly cover from 75,000 to 100,000 miles annually, and, assuming proper design, practically no attention should be required, other than a thorough examination and cleaning once a year, with repairs and renewals to minor parts. Furthermore, such engines should have an almost unlimited useful life.

A very important point is the fact that six-cylinder engines of more than 500 cu. in. capacity cannot be expected to give economical service if operated for very long periods at speeds higher than 2000 r.p.m. The net result is that the size and weight of six-cylinder engines becomes out of all proportion where a very large power-output is required. It seems reasonably clear that engines displacing over 600 or 700 cu. in. should be of the V type, not the least of the advantages being the question of space requirements. It also seems clear

that unless supercharging becomes a factor, the future heavy-duty parlor-car engine will displace from 900 to 1000 cu. in.

Research and Development Program

Supercharging is unquestionably a matter deserving the closest possible scrutiny. Many passenger-car engineers disregard this issue altogether, preferring the popular annual reaming process. Of course this is the easiest way out; but there is a limit to the possible size of motor coach engine cylinders, and engines of more than 700 cu. in. represent a tremendous mass of metal, take up a lot of room and cost a great deal of money to buy and maintain.

Tests made to date indicate that supercharging is within the realms of possibility. The best scheme seems to be the high-pressure-type blower of large size operated at relatively low speed. Unfortunately, however, there is little or no likelihood of developing superchargers that can be attached to existing engines, for the engine and supercharger design must be worked out jointly. This, of course, means delay so far as production possibilities are concerned.

Transmission design has changed very little since the first automobile was built—a rather discouraging state of affairs. The problem of gearshifting, of course, is still with us, but the question of noise is the vital issue. There is no such thing as quiet transmission, silence being used, in this connection, as a merely relative term. We all know that quietness is essential, yet we have no satisfactory means of measuring whatever success we may think we have attained; and, worse still, the fundamentals which would make possible the effective control of transmission noise are unknown. Actually, automobile engines now have reached such sizes that transmissions can be considered as auxiliary devices, their primary use being the reversing of the motions of the vehicle. But a different condition is faced with the motor coach. No matter how we enlarge the engines, the transmission will be required to perform a considerable amount of service; and the higher torque which must be transmitted through future motor coach transmissions will increase rather than decrease our difficulties.

Constant Experiments in Variable Gearing

From these remarks it should not be concluded that manufacturers are entirely asleep at the switch. Experiments are being made constantly in connection with various forms of variable gearing. Then there are the possibilities of electricity and, last but not least, of steam. Concerning the gearshift and noise problems, it is considered by some that the gas-electric will be the final solution. Perhaps this is so, but the present electrical systems are heavy and expensive. It is recognized generally that the characteristics of the average motor coach engine are not suited to the electrical equipment now available, and it has been suggested that the motor coach industry should produce entire special engines; but the enormous development cost is prohibitive. The average motor coach manufacturer is reluctant to place himself unqualifiedly behind the gas-electric drive because he is not sure that the electrical manufacturers will move with the times.

Mention should be made of the fact that the gas-electric motor coaches now built by the various American manufacturers are, generally speaking, mechanically sound. The only real objections are that the fuel-consumption, weight and cost are high.

It is somewhat surprising that steam has not played a more prominent part in the motor coach industry. At first sight, steam is the ideal solution; however, little or no success has attended the various developments that have appeared. Nearly all steam-propelled vehicles give spectacular performance, yet none of them has withstood satisfactorily the acid test of time and distance. This does not mean, however, that steam is out of the picture. In fact, future developments along this line are assured. How successful they will be, it is hard to foretell; but the tremendous advantages, such as maximum torque at zero speed and absolute silence, are irresistibly attractive. Nevertheless, steam as a factor in the motor coach industry is still far distant, and in all probability the tremendous advantages have corresponding disadvantages; at least this has been the history in the past.

Oil-coolers give the following potential advantages: (a) Easier starting, since lighter oils can be employed; (b) less oil consumption, as the viscosity can be kept more nearly constant; (c) less cost because more miles per gallon can be expected from relatively lower-priced oils; (d) less wear, because of better lubrication throughout, resulting from a higher average-viscosity; (e) longer bearing-life, due to the decreased tendency for the babbitt to soften from heat; and (f) less carbon-formation, because the lighter oils have a lower carbon-content.

Lubrication

The modern high-speed interurban motor coach is required to operate for very long periods, with the engine delivering a large percentage of its total power-output. This condition introduces a number of complications, particularly with respect to lubrication. As a result of the accumulated heat, many of the oils commonly used tend to decrease rapidly in viscosity, in some instances to such an extent that the oil film is no longer capable of supporting the pressure imposed upon it.

In practically all aircraft engines, provision is made for oil-cooling. It would be difficult, if not impossible, to run these engines successfully otherwise. The operating conditions of motor coach and aircraft engines are in some respects parallel; high duty for continuous periods is one of the controlling issues in both cases. From the standpoint of decreasing engine operating expenses generally, the influences of oil-cooling cannot be over-estimated.

That the six-wheel system will play an important part in the future development of the heavy-duty motor coach, there cannot be a shadow of a doubt.

From an engineering viewpoint we should not be satisfied with the results obtained to date. These comments apply with special force to the long-distance, high-speed, interurban type of coach. My feeling is that the engineers should leave no stone unturned to sell their respective managements upon the necessity for expending substantial sums on motor coach research and development work generally, with particular reference to larger engines; oil-cooling; the supercharger; the improvement, or better still, the elimination, of the transmission; the gas-electric drive; steam propulsion, and the six-wheel system.

SLEEPER MOTOR COACH SERVICE was inaugurated in Ireland on January 1 when the Irish Sleeper Omnibus Service commenced operations between Dublin, Limerick and Cork. Although intended primarily as a sleeper the vehicle in the service is designed so that it may be converted for day travel. Sleeping accommodations comprise eight berths while in day service seats are available for 32 passengers. Kitchen and toilet facilities are also provided.

An International Truck in Service on a California Freight Line

Getting Good Performance from Motor Trucks

Proper attention to the details of truck maintenance will assure greatest operating efficiency

By Fred B. Lautzenhiser
International Harvester Company of America

NEARLY half of all troubles experienced with motor trucks is due to overloading and overspeeding. A truck rated to carry two tons should not have three tons inflicted upon it. It may have a high factor of safety engineered into it, but that high factor of safety may be progressively reduced until the failure point is reached.

Metals are subject to fatigue and can be injured internally without the presence of external evidence. A truck designed to carry two tons may have a general factor of safety of 15, meaning that it would sustain a motionless or dead load of fifteen times its rated capacity without injury; but loading the truck with three or more tons of freight and driving it at high speed over rough roads, railroad crossings and other obstructions will result in shocks which will gradually reduce the factor of safety until failure occurs, in the frame, steering knuckle, drive shaft or other parts.

On the other hand, proper loading and careful operation of the truck, together with close attention to the details of its maintenance, will assure full and efficient service from it. The following are suggestions as to the principal items to be looked after in the maintenance of a motor truck.

The Engine

The valve tappet clearance in the engine should be maintained in accordance with the manufacturer's recommendations, generally 0.010 of an inch for the intake valves and 0.016 for the exhaust. The valves should be ground and the carbon removed after each 5000 miles. At the same time, the oil pan should be dropped and the bearings inspected and taken up if necessary. The oil pump and strainer should be cleaned and the oil lines cleared by forcing air through them. The carburetor strainer screen should be cleaned out frequently. This may be done by removing the screen and setting fire to the gasoline on it with a match to remove the dirt.

The following diagnoses are submitted for the symptoms indicated:

Back-firing under load:—
- Carburetor set too lean
- Dust or water in the fuel line
- Gas supply low
- Cold engine
- Spark plug wires mixed
- Valves sticking or not properly seated
- Ignition or valve timing incorrect
- Air leak in intake manifold or gasket

Engine loads up, slow pick-up, black exhaust:—
- Carburetor set too rich
- Choke partly closed
- Vacuum tank flooding, float sunk
- Carburetor flooding, float sunk

Engine dies at idling speed:—
- Carburetor set too lean
- Throttle stop screw improperly adjusted
- Spark plug gap too great
- Breaker point gaps too wide
- Leaking valves
- Air leak into intake manifold

Engine overheats:—
- Ignition timing incorrect
- Lean or rich mixture
- Poor water circulation, dirty water
- Loose or oily fan belt
- Water pump inlet hose sucked flat

Engine knocks or "pings":—
Spark advanced too far
Engine overheating
Loose connection rod bearings (Heavy knock)
Loose main bearings (Heavy pound)
Loose piston pin bearings (Light knock)
Loose valve tappets, clearance too great (light tapping)

The Clutch

Little attention is required ordinarily by the clutch other than a regular filling and turning down of the grease cups. It should operate several thousand miles before any adjustment even for slippage is required. If the clutch should either grab, slip or chatter, it is probably because the fiber discs have become saturated with oil, or have become glazed. It is not necessary to remove the discs to correct this since a quart of kerosine can be poured into the clutch while the rear wheels are jacked up and the engine is turning slowly. This applies, of course, only to the dry disc type of clutch. If the clutch is removed, it is important that it should be returned to exactly the same position as before. This can be made possible by placing location marks on both clutch cover and flywheel before removing the clutch.

Drivers should be instructed not to use the clutch pedal for a footrest while driving. This is hard on the throwout bearing and results in clutch slipping.

The Transmission

There should be no necessity for maintenance work on the transmission other than an occasional changing of the lubricant. Provision is made for the adjustment of the tapered roller bearings at the ends of the main and counter shafts, either by shim removal from between the bearing cups or cages and the bearings proper, or by the adjusting screw set in the caps and riding on the pressure plates, or by the adjusting nuts which surround the shafts. This refers to those types of transmissions which are equipped with tapered roller bearings, adjustments in which are made by forcing the cone and roller assembly deeper into the cup.

With ball bearing and straight roller bearing types, no adjustment is provided for. With these types, however, there are other means of taking the end thrusts.

Universal Joints and Propeller Shaft

The fabric joints should be kept just tight enough so that the washers between which they are sandwiched are slightly imbedded into the discs, yet not enough to break the fabric. If they are too loose, they will elongate the holes and the joint will be torn to pieces. If too tight, the fabric will be cut slightly and the cut places will soon extend themselves until the fabric is cut through. Fabric joints are excellent cushions against torque surges and reactions, and are easily replaced. All metal joints have provision for their continuous operation in a bath of lubricant and are completely housed-in to prevent loss of lubricant. Only a sufficient quantity of lubricant to form a film over the working parts should be carried in the universals.

The front joint of the rear propeller shaft generally has a slip joint arrangement, splined or otherwise, which shortens or lengthens, conforming itself to the raising or lowering of the frame through the spring action. If this joint must be disassembled, the engaging parts—the splined shaft or sleeve—should be marked so that the same relation is obtained in the reassembly.

After each 5000 miles, the front wheel bearings should be removed, thoroughly washed in gasoline, dried and repacked with cup grease. After being washed, they should be carefully examined for wear and to determine whether or not a chipped or pitted condition exists. If so, the worn bearing should be replaced.

The steering knuckles should be examined for wear and special note taken of any small cracks at the inner ends of the spindles. If a crack is in evidence, no matter how small, knuckle should be replaced at once. The condition of the steering knuckle pins or king bolts should be carefully determined, and the bushings replaced if worn. All steering connections should be kept tight, with all lost motion eliminated in the drag link and the steering gear. The rocker arm will require occasional attention and should be kept tight on the splined shaft and securely locked. A slight amount of back-lash in the steering wheel is desirable, but only a slight amount.

To determine whether the toe-in of the front wheels is correct, measure the distance between them at given points on the rims on a level with the wheel hubs in front of the axle, and compare this with the distance between the wheels at the same points on the rims and at the same height from the ground behind the axle. The measurement in front should be from 3/8 to 1/2 inch less than that in the rear.

Straightening an axle center, steering arm or other part by heating should never be attempted. All straightening should be done with the part cold. Heating draws the temper of the part, removing the toughness of the material imparted by the heat treating, leaving it soft and pliable, and subject to early failure at the weakened point. The front axle should be completely dismantled, inspected and overhauled after each 25,000 miles.

After each 5000 miles of operation, the rear axle should be carefully inspected involving the removal of the wheels, differential, axle shafts, etc. The brake drums and linings should be examined and replaced if necessary.

Extreme care should be exercised in the adjustment of the drive gear shaft and the differential bearings, after which all adjustment retainers should be locked or wired in place. The differential and axle housing should be thoroughly steamed out or washed with gasoline. If the ring gear or worm wheel rivets are loose, they should be either tightened up or removed and replaced, since a loose differential gear case will soon cause very costly damage.

* * *

Motor Coach on Route of Spokane, Portland & Seattle

White Adds Light Delivery Chassis

A NEW six-cylinder light delivery truck has been added to the present line of models manufactured by the White Company, Cleveland, Ohio. The new truck, known as the Model 60, has been designed to afford greater operating safety under present traffic conditions.

The engine is a six-cylinder L-head type having 3½ in. bore and 4½ in. stroke and a rated horsepower of 29.4. The valves are located on the right side of the engine with the operating mechanism enclosed by removable cover plates. The crank shaft is mounted on seven main bearings and is dynamically balanced. Lubrication of all important parts is effected by a gear-type pressure pump. The engine, clutch and transmission form a unit power plant, driving through a spiral-bevel single-reduction rear axle mounted in a one-piece housing with taper roller bearings throughout. The semi-floating assembly has large diameter alloy-steel axle shafts.

Smooth carburetion at varying speeds is accomplished by the use of a compound-jet carburetor and a hot-spot manifold. A special arrangement of crankcase breather exhausts around the carburetor intake, allowing the combustible content to be burned with the gas and all fumes to be carried out the exhaust. The distributor, which operates with battery ignition, is mounted on top of the engine block and is driven from the same shaft as the oil pump of the pressure system. Among other features of design are thermostatic water control, air and oil cleaning systems, core radiator with chromium-plated shell, attractive instrument board, light control on the steering wheel and four-wheel hydraulic brakes.

The wheels are cast steel with U-section spokes and the standard equipment consists of 30-in. by 5-in. or 32-in. by 6-in. high-pressure single tires, front and rear, on the 138-in. and 157-in. wheelbases, respectively. The maximum gross weight allowance is 6,000 lb. on the smaller size tires and 8,000 lb. on the larger. The widths of the frame at front and rear are 27 1/16 in. and 34½ in., and the distance from the back of the cab to the center of the rear axle is 58¾ in. on the 138-in. wheelbase and 77¾ in. on the 157-in. wheelbase.

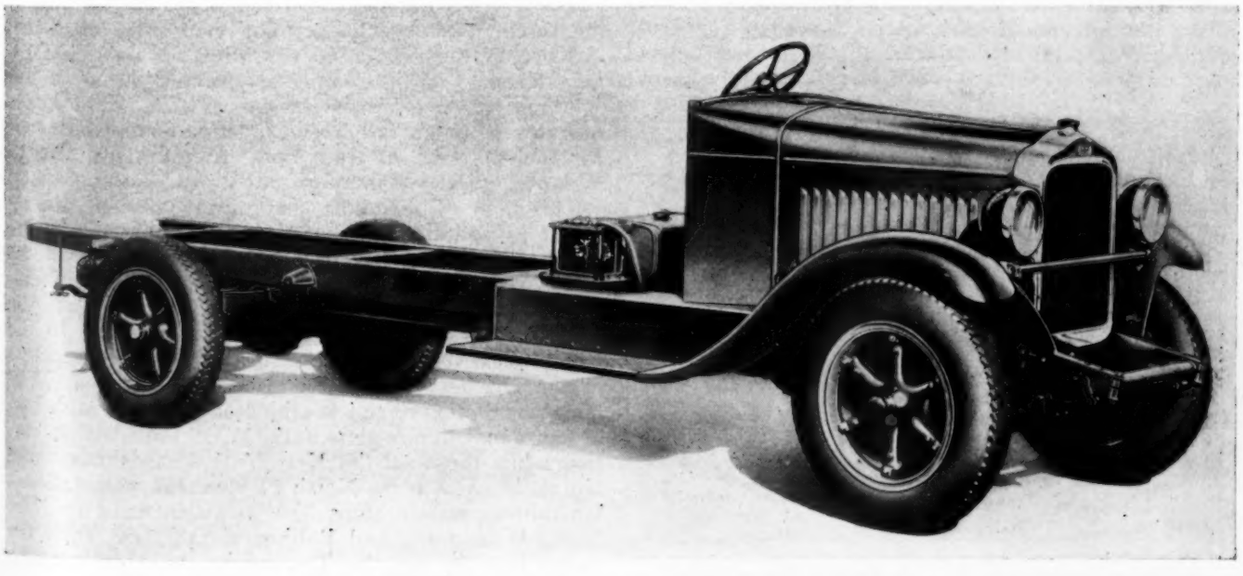
Tells Why Southern Pacific Bought Oregon Coach Lines

THE circumstances which led the Southern Pacific Motor Transport Company to purchase the lines of two independent motor coach operators in the state of Oregon, the Oregon Stages and the Coast Auto Lines, are described by J. A. Ormandy, assistant passenger traffic manager of the Southern Pacific at Portland, in the following statement. Indicating that the motor transport company had had a net loss of $54,734 in its Oregon operation during 1928, Mr. Ormandy said: "The original plan of the Southern Pacific in beginning motor coach service in Oregon was to permit the cancellation of local trains which did not pay operating expenses, but which furnished service for passengers, mail, baggage and express to various communities. Experience and study had convinced us that this service could not, without public inconvenience, be withdrawn, unless some substitute service were furnished. The management did not, at that time, desire to enter the general motor coach operation field.

"As soon as we began operations, we received urgent demands from the traveling public and from the communities served for extensions and increases of the coach service to approximately the same basis as that of the independent lines competing with us. In other words, while the general and traveling public welcomed the advent of the Southern Pacific interests into the field of highway transportation, they could not understand why the service furnished by the Southern Pacific should not be as full, complete and convenient as the service furnished by the independent lines.

"To meet this pressure we found ourselves gradually increasing our highway service on the main lines and extending that service on the branch lines. This development brought us face to face with another potent fact—that the expenses of operation mounted faster than the revenues. The independent lines were strongly entrenched, and held exclusive interchange contracts with connecting stage lines.

"We finally concluded that one of two courses was open to us: To continue the operation and increase the frequency of the service so that in all cases it would be either equal to or greater than the service of our com-



Model 60 White Six-Cylinder Light Delivery Truck Chassis

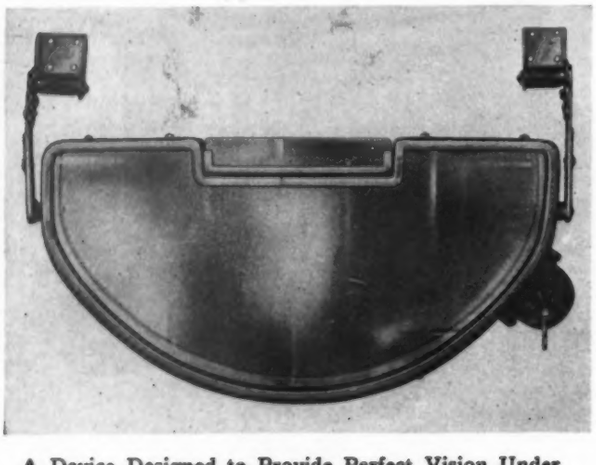
petitors; or to acquire the independent lines competing with us.

"According to the estimates which were drawn up at that time, it was found that to increase the frequency of our service would increase quite materially the losses which we were sustaining, and these losses would continue over a long period of gruelling competition until, possibly, in two or three years, our independent competitors would have become worn out financially. The management finally concluded that the logical and intelligent policy was to purchase the independent competitors. The operators of the independent stage lines were, as a rule, owners of the properties, and in acquiring these independent properties, the Southern Pacific Motor Transport company has taken into its employ the officers and employes of the independent lines. Through the acquisition of these lines, we find we have acquired the good will not only of the independent stage operators, but of the stage travelers and the communities served by those companies. I mean by this that the acquisition of the independents' stage lines by Southern Pacific interests, according to our public contacts all over the state, is very acceptable to, and welcomed by, the general and traveling public."

Windshield Clear-Vision Attachment

A PATENTED device designed to insure perfect vision through standard automobile windshields has been placed on the market by G. Robert Osgood, 126 Dexter street, Malden, Mass. It consists of a pane of scientifically tinted optical glass, developed in England, shaped in an irregular rectangle about 17 in. wide and 10 in. high held in a nickel frame in which is mounted resistance wires for supplying heat from regular batteries or generators. The frame is supported by hinged, spring brackets on either side, which are adjustable from a rachet.

In operation, the device is pressed on a cork gasket tight against the inside of any type of windshield, straight or tilted, swinging or fixed. If the operator wishes, the whole device can be swung up against the inside top of the car. It cannot loosen, rattle or vibrate in any position, nor does it interfere with the present equipment of cars. No attachment on the instrument board or any glass surface is necessary. It can be easily installed in a few minutes. The space enclosed by the device is clear; no wire or metal of any kind is visible inside the frame, which is less than one inch wide.



A Device Designed to Provide Perfect Vision Under All Weather Conditions

The almost imperceptible tint in the clearest optical glass clarifies the complementary prism effect of clear plate glass so confusing when driving in hot weather, intense sunlight or reflected snow light. At night, the on coming headlights cannot glare, the reflected beams of following headlights or side street lights are wholly eliminated. The color of the glass is said to be such the objects are distinguished more clearly than is possible through clear plate glass.

When rains are driving against the windshield, the device is said to correct the waving of vision caused by the courses of water which seem to be veritable flowing streams. The spattering of rain drops creates a usually unreckoned bending of the vision. Frequently, fog and mist cloud the outside of the windshield and, in the case of closed cars, steam condenses on the inside of ordinary windshields. The air enclosed between the glass in the windshield and in the device loses temperature so much slower than the car atmosphere that condensation is obviated.

At low temperatures, when frost and snow or ice cover windshields, a very slight current of battery power is turned on to heat the device. This heat is regulated by an attached switch, adjusted to the severity of the wind or weather. Its current consumption is said to be so slight, even at its highest position, that it is negligible. It does not affect the ordinary car battery nor interfere with any of the usual functions required of it.

Pennsylvania Effecting Co-ordinating Plans

THE Pennsylvania, in carrying out plans for co-ordinating its rail services with those of its recently acquired motor coach lines, has arranged for the sale, at several of its stations and agencies, of motor coach tickets for travel over lines of the Peoples Rapid Transit Company, Inc. These Pennsylvania stations are also the stopping places for motor coaches.

The Peoples Rapid Transit Company, Inc., is one of the three motor coach operating companies of which the Pennsylvania acquired control from the Philadelphia Rapid Transit Company. As announced in the *Motor Transport Section* of January 26, the Peoples operates 76 motor coaches on inter-state routes out of Philadelphia, Pa., to New York, Atlantic City., N. J., Wilmington, Del., Baltimore, Md., and Washington.

This plan of including the railway stations among the stops and ticket agencies of the motor coach line was inaugurated of February 13. On that date all motor coaches, operated by the Peoples out of Philadelphia commenced leaving from and arriving at the Pennsylvania's Broad Street station in addition to the motor coach station at Thirteenth and Market streees.

The coaches operating between Philadelphia, Wilmington, Baltimore and Washington will make additional stops in both directions at the West Philadelphia station while those on the New York-Philadelphia route will do likewise at the North Philadelphia station. Similar railway station stops have been arranged in New York, Wilmington and Baltimore. In New York the motor coaches use the Thirty-first street entrance to Pennsylvania station.

Motor coach tickets are on sale at each of the foregoing stations. The announcement further states that seat space in the motor coaches will be reserved, assigned and sold in the same manner as Pullman car space.

The timetable of the Peoples Rapid Transit Company, Inc., which became effective on February 13, listed 14 daily round trips between Philadelphia and Atlantic City with a like number of scheduled runs on the New York-Philadelphia route. On this latter the first coach leaves Philadelphia at 4:00 a. m., the second at 7:15 a.m. following which an hourly schedule is maintained until 6:15 p.m. After this there is a coach at 8:00 p.m. which is the last until the 4:00 a.m. trip. In the return direction coaches leave New York hourly on the half-hour from 7:30 a.m. to 6:30 p.m. while additional coaches in this direction, are scheduled to leave New York at 11 p.m. and 1:00 a.m. This New York-Philadelphia run is made in about 4½ hours while the 10:30 a.m., 11 p.m. and 1:00 a.m. coaches make through runs to Washington.

Service on the Philadelphia-Atlantic City run is available hourly between 6:45 a.m. and 6:45 p.m. after which one more trip is made at 11 p.m. In the return direction the first coach leaves Atlantic City at 8:30 a.m., the second at 10 a.m. when hourly service is provided until 9:00 p.m. with a late run at 11 p.m. This run requires 2 hr. 40 min. A consolidated timetable of service between New York, Philadelphia and Atlantic City is also published. In this connection there are eight of the regular daily runs out of New York scheduled to co-ordinate with a like number of the regular Philadelphia-Atlantic City runs. In the return direction nine runs are so scheduled from Atlantic City.

Between Philadelphia and Wilmington eight daily round trips are scheduled. Three of these are an integral part of runs between New York and Washington. This latter requires approximately 11 hours.

The Peoples, in addition to the foregoing provide connections to give through motor coach service from New York to Chicago in conjunction with the Greyhound Lines, and from Boston, Mass., to Jacksonville and Miami, Fla., in conjunction with the New England Transportation Company, (a subsidiary of the New Haven Railroad), the Greyhound Lines and the Florida Motor Lines. The coaches connecting at Philadelphia for Chicago leave New York at 1:00 a.m. and 12:30 p.m. daily and on the return trip leave Chicago at 10:30 a.m. and 11:30 p.m.. A 9 a.m. coach out of Washington makes the same connection at Philadelphia for Chicago as does the 12:30 p.m. coach out of New York. Likewise both coaches out of Chicago connect with Washington coaches at Philadelphia. The run between New York and Chicago is scheduled to take about 40 hours.

On the Boston-Miami schedules, which are routed via the Peoples Company between New York and Washington, two coaches leave Boston daily, one with connections through to Miami, a second with connections to Jacksonville. There is another connection made with a Boston coach, which schedule terminates at Washington. Through service is available on two daily coaches out of Miami. Three days are required for this trip.

THE CENTRAL OF NEW JERSEY, in co-ordination with the runs of its new train, the "Blue Comet," between New York and Atlantic City, has established motor coach service between Hammonton and Bridgeton. The runs of the "Blue Comet" commenced on February 21. One motor coach, chartered from the Public Service Corporation of New Jersey, is used on the route which covers 33 miles.

Motor Transport News

ACCORDING TO PRESS REPORTS, the Southern Pacific Motor Transport Company has effected substantial reductions in the one-way motor coach fares between Los Angeles, Cal., and El Paso, Tex., and intermediate points. These reductions will be effective until March 21. The special excursion rate is good only for continuous passage, although the tickets may be used either by way of the Apache Trail Highway or via Tucson, Arizona.

A SPECIAL MAIL COMMITTEE has been appointed by the chairman of the Bus Division, American Automobile Association, to investigate the transportation of mail by motor coach and to make recommendations regarding governmental regulation of this service. Several months ago, the Postmaster General proposed legislation to make such regulation effective. Officers of two motor coach operating subsidiaries of railways are members of the committee: E. J. Phillips, vice-president of the New England Transportation Company and C. E. Wickman, president of the Northland Transportation Company.

A NATIONAL COMMERCIAL VEHICLE SHOW will be held in the middle west late in 1929, according to an announcement by the motor truck committee of the National Automobile Chamber of Commerce, which is sponsoring the event. The exhibition will include all types of motor coaches, motor trucks, taxicabs, delivery wagons and special service vehicles. A national motor transportation convention will be held at the same time for the benefit of the operators of motor vehicles, including the various organizations which are especially interested in commercial transportation.

Mo. P. Buys Option on St. Louis-Kansas City Coach Line

The Missouri Pacific Transportation Company has secured an option on the motor coach line of the Capitol Stages Company operating between St. Louis, Mo., and Kansas City over state highway No. 50. Application has been made to the Missouri Public Service Commission for approval of the transfer of the Capitol Stages' operating certificate. The highway covered by the route parallels the Missouri Pacific railway line between St. Louis and Kansas City, and the motor coach service on it will supplement the train service. The route is 280 miles.

Adequate Service of Existing Operator Held Not to Give "Monopolistic" Rights

In overruling a motion on the part of the Missouri Public Service Commission for a rehearing of the court order directing the commission to grant an operating certificate to the Detroit-Chicago Motor Bus Company for the intrastate operation of motor coaches between St. Louis and Kansas City, the circuit court of Cale County, Mo., is considered to have dealt a blow at the "monopolistic" feature of the Missouri motor coach regulatory law. The state commission had rejected the coach line application for a permit on the grounds that the two motor coach lines already holding permits over the route in question were rendering adequate service. In its appeal to the circuit court from the decision of the commission, the coach line contended that the "monopolistic" feature of the state law was unconstitutional, and that the state commission had no right to restrict operations on a state highway. The commission filed notice of appeal to the supreme court of the state.

Merger Forms World's Largest Motor Coach Line

The Greyhound lines operated by the Motor Transit Management Corporation, with headquarters at Chicago, and the Yelloway Lines, operated by the American Motor Transportation Company, with headquarters at San Francisco, have been merged and will be operated in the future under the direction of the American Motor Transit Corporation. This will be the largest motor coach transportation system in the world, representing an investment said to be more than twelve million dol-

lars. The Greyhound lines operate daily schedules between practically all of the principal cities of the middle western, central eastern and southern states, its main routes extending from Chicago to Detroit, Toledo, Cleveland, Pittsburgh, New York, Indianapolis, Cincinnati, Louisville, Atlanta and Jacksonville. The Yelloway Lines cover the Pacific seaboard from Portland, Ore., to San Francisco and Los Angeles, and extend eastward from Los Angeles to New York, via Denver, Omaha, Kansas City, St. Louis, Indianapolis and Philadelphia.

Protest Tax Increase in Missouri

Representatives of a number of motor coach lines in Missouri attended a public hearing at Jefferson City on February 1 to protest against a bill recently introduced in the Missouri legislature which would increase the taxes on the motor coach lines in the state. It was contended that the proposed new schedule would increase their taxes to as much as 82 times the present scale. The new bill proposes to tax motor coaches on the basis of their capacity and mileage, rather than on the basis of their capacity only as at present. The proposed bill would tax motor coaches on the following basis: coaches of 10 passengers or less, 5 cents per mile; 11 to 20 passengers, 10 cents per mile; 21 to 30 passengers, 20 cents per mile; 31 passengers or more, 25 cents per mile. It was contended by an officer of one of the principal Missouri lines that the bill would increase the taxes of this company, on the twelve motor coaches operated between St. Louis and Kansas City, from $2,760 annually to $227,760.

Another bill pending in the senate of the Missouri legislature would retain the tax based on capacity but would greatly increase the rate. Under this bill, motor coaches would be taxed in greater amounts as follows: 7 passengers capacity or less, increase from $40 to $80; 8 to 12 passengers, increase from $90 to $200; 13 to 18 passengers, increase from $140 to $300; 18 to 24 passengers, increase from $180 to $450; 24 passengers to 30 passengers, increase from $230 to $600. Motor coaches of 31 or more passengers capacity would be taxed $750 annually.

Orders for Equipment

THE SOUTHWESTERN TRANSPORTATION COMPANY has accepted delivery of eight Model 54 White six cylinder motor coaches, with Bender parlor type bodies.

THE SOUTHERN PACIFIC MOTOR TRANSPORT COMPANY has ordered five additional Type W Yellow coaches and an additional Type Y motor coach from the General Motors Truck Company, Pontiac, Mich.

Among the Manufacturers

George H. Scragg has again become actively associated with the **Mack International Motor Truck Corporation,** having returned from an extended trip which took him to the West Indies and Europe.

Motor Transport Officers

Edward Krummen has been appointed division superintendent of the Southwestern Transportation Company, subsidiary of the St. Louis Southwestern, with headquarters at Stuttgart, Arkansas. Mr. Krummen formerly operated the Krummen bus line between Little Rock, Stuttgart and Gillette, which was recently acquired by the St. Louis Southwestern.

On January 1, the following appointments and changes became effective on the Boston & Maine Transportation Company: **Leon L. Ricker,** assistant superintendent trucking, with headquarters at Boston, Mass.; **George T. Sheahan,** freight solicitor; **Arthur W. Kelley,** freight solicitor, with headquarters at Boston; **James Loughlin,** inspector of trucking, Lawrence, Mass., district; **J. Frank Lawlor,** inspector of trucking, Dover-Rochester-Biddeford district, and **D. Archie Ells,** inspector of trucking, Boston office.

Marion F. Steinberger, special engineer of the Baltimore & Ohio, with headquarters at Baltimore, Md., has been appointed manager of highway transportation, with the same headquarters.

Marion F. Steinberger

Mr. Steinberger was born in Baltimore on March 30, 1887. He was educated in the public schools of that city and Polytechnic Institute, entering the service of the Baltimore & Ohio in November, 1905, as axeman in the engineering department. He subsequently served as chainman, rodman, draftsman and instrumentman, in the engineering department until April, 1910, when he was appointed draftsman in the operating department. The following year he became overtime inspector on the staff of the operating vice-president and in September, 1914, he became chief of the joint and special facilities bureau. From August, 1915, to March, 1917, he was supervisor of standard costs and outside operations and on the latter date he went to New York as lighterage agent. In June, 1918, Mr. Steinberger was appointed assistant manager of the personnel department and in March of the following year he was appointed supervisor of terminal operations. He was promoted to special engineer on the staff of the operating vice-president in May, 1920, which position he held until his recent promotion.

RAILWAYMAN: "You know what this means? Why, that we shall have to do the same!"

From Railway Review (A British railway Union publication)